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Using Social Media In Flipped Classrooms In Saudi Universities: Faculty Members' Experiences

Majed Abdallah Alharthi
Wayne State University, fr1574@wayne.edu

USING SOCIAL MEDIA IN FLIPPED CLASSROOMS IN SAUDI UNIVERSITIES: FACULTY MEMBERS' EXPERIENCES

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MAJED A. ALHARTHI

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DEDICATION

This work is dedicated to all my family:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.1 Background

Social media play a significant role in a number of aspects of people's lives, not to mention its active role in the educational field, so "social media technology has become an essential part of personal life" (Tess, 2013, p. 60). Also, social media nowadays help in creating a robust relationship between formal and informal learning, either incidentally or by choice, as well as effectively contributing to the cancellation of temporal and spatial restrictions on learning. In addition, Everson et al (2013) asserted the role of social media in creating opportunities for students to engage in online activities and collaborate with others (p. 69).

Social media technologies have begun to be embraced broadly, both at the level of individuals and institutions. According to studies conducted by Salaway and Caruso (2008) and Jones and Fox (2009) about Facebook adoption and usage, 94% of college students have personal accounts on Facebook, and spend 10–30 minutes on the site with their friends. Also, Greenhow et al. (2009) reported that "students tend to use certain Web 2.0 technologies in everyday life, and some feel they would benefit from more inclusion of such technologies in the classroom" (Everson et al, 2013, p.70). Also, social media technologies have begun to appear increasingly in the field of higher education. According to Reuben (2008), there are many colleges and universities that have started embracing social media, realizing its potential role in learning (p.1). In addition, social media have a significant role in carrying out some pedagogical approaches and in addressing some learning styles. For example, social media were used by Bonnie Ferri as the flipped classroom through developing two MOOCs in conjunction with her class in order to enhance interactive and collaborative learning (Raths, 2015). As another example, Alguraibi at King Abdul-Aziz University, Saudi Arabia, designed courses with her

students on a Facebook page in order to engage and exchange opinions with each other (Aifan, 2015, p. 63).

Saudi universities are striving diligently to keep up with the technological development and the employment of modern trends in the educational process. For example, many Saudi universities have adopted several projects that focus on merging various technologies in the learning process through e-Learning and distance education deanships (Taif University, 2016, King Abdulaziz University, 2015). Also, the College of Dentistry at Taibah University (TUCOD), in Madinah, Saudi Arabia,"has recently begun to promote the gradual incorporation of interactive learning methods, such as the flipped classroom, and problem-based learning (PBL)" (Jambi et al, 2015, p.46).

Traditional learning methods are no longer viable at the present time. The student has become a vital element in learning through student-centered learning environments. Also, a student in the digital age should work independently and collaboratively, using diverse technologies before coming to the classroom through the activation of the notion of the flipped classroom (Zainuddin & Halili, 2016).

The flipped classroom creates collaborative learning among students, results in more effective use of class times, and incorporates widely accepted social media in the teaching and learning process. These reasons together with the fact that little research has been done on employing social media as a flipped classroom tool in teaching process make the flipped classroom a scenario worthy of further study. Therefore, this study focused on faculty members' experiences and their abilities in Saudi universities to employ social media in the flipped classroom. In addition, this study discussed how faculty members could use social media as a

flipped classroom tool to address students' learning preferences, as well as explore the factors that prevent or limit them.

1.2 Research Problem Statement

In our current era, with the technological revolution and integration of technology into education environments, pedagogical communities have started to embrace the new instructional approaches through which teacher-based learning environments have transformed to student-based learning environments. One of these approaches is the flipped classroom, which emerged as a new approach in order to both increase the effectiveness of learning through students' positive participation and make use of class time efficiently in collaborative activities among students and their teacher (Estes, Ingram, & Liu, 2014; Keengwe, Onchwari, & Oigara, 2014; Bergmann and Sams, 2012; Acton & Knorr, 2013; Wilson, 2013). Also, the flipped classroom has a significant role in enhancing collaborative learning and problem-based learning because students are provided with access to online videos which include the lesson content, allowing students to take advantage of class time in discussions and working on solving the problem (Foertsch et al., 2002; Zappe et al., 2009; Bergmann, Overmyer, & Wilie, 2012; Hughes, 2012; Fulton, 2012; Davies et al., 2013). One of the misconceptions about the flipped classroom is the belief that it includes the mere assigning of reading outside of the class and having discussions in class. This notion was strongly rejected by Bishop & Verleger (2013), who clarified that the flipped classroom should consist of two parts: interactive learning among students inside the classroom and individual instruction oriented by technology outside the classroom (Bishop & Verleger, 2013, p.3). This means that technology is the key element in implementing the flipped classroom.

Substantiating this claim, Everson et al. (2013) declared that "There is no escaping the fact that we now live in a world where people have opportunities to connect, communicate, and collaborate in ways that were once inconceivable"(p.69). Thus, the presence of the Internet and social media have given individuals the opportunity to participate in online activities and to collaborate with others. In addition, in a recent study conducted by Zainuddin & Halili (2016) on 20 articles from 2013–2015, the results indicate that there is diversity in technology tools or online platforms that have been used for implementing the flipped classroom. As a result, the research of the flipped classroom nowadays should not limit their demands to simply doing away with assigning reading outside, as mentioned by Bishop & Verleger, but, rather, they should look to determine to what extent instructors and teachers have the ability to employ interactive and collaborative activities, and use various technology tools and online platforms in implementing the flipped classroom as suggested by Al-Harbi & Alshumaimeri (2016) and Al-Zahrani (2015).

The term flipped classroom is very dynamic and is one of the hot topics in higher education (Honeycutt & Garrett, 2014). There are many studies that have discussed the flipped classroom in higher education as noted in the studies carried out periodically, yet the majority of these studies have focused completely on students. For example, the studies of Davies et al. (2013), Baepler et al. (2014), McLaughlin et al. (2014), and Enfield (2013) all focused on the impact of the flipped classroom on student achievement. Also, Kim et al. (2014), McGivney-Burelle and Xue (2013), and Galway et al. (2014) focused on the impact of flipped classroom on student motivation. In addition, Chen et al. (2014), and Missildine et al. (2013) focused on student engagement and satisfaction about the use of the flipped classroom.

The studies and research in Saudi Arabia in the field of the flipped classroom are not any different from other previous studies; they also focused on the role of the flipped classroom on

students. For example, Al-Zahrani (2015) studied the impact of the flipped classroom on cognitive achievement in eLearning courses among students from the faculty of education at King Abdulaziz University. In this study, Al-Zahrani recommended that the flipped classroom should include adequate e-learning tools. Also, Al-Harbi & Alshumaimeri (2016) carried out a study in order to determine the impact of the flipped classroom on students' performances and attitudes. Another study (Aboraya & Alket, 2016) examined developing a mobile application in order to support students' learning in the flipped classroom. Although this study appeared to serve a positive role for mobile applications in the flipped classroom, it still focused on the impact of the flipped classroom on the students.

To date, research in the technological arena has made important advances, and studies have shown the important role for merging technology in instructional process. However, there is a shortage of research specifically about the use of social media for educational purposes (Greenhow, 2011). As a result, due to a deficiency of studies that focus on attitudes and experiences of faculty members at Saudi universities toward using social media in flipped classrooms, and in response to Al-Zahrani (2015) who claimed the flipped classroom should be equipped with adequate e-learning tools, this research (Using Social Media in Flipped Classrooms in Saudi Universities: Faculty Members' Experiences) helped in determining both faculty members' attitudes and experiences toward employing social media in the flipped classroom and what factors may prevent or limit that.

On the other end, learners differ in how they learn and what their preferences for learning are. Some established preferences include: visual learners prefer to learn through figures, pictures, and symbolic tools; auditory learners tend to learn by listening; reading/writing learners tends to learn through printed word and text; and kinesthetic, tactile, or exploratory learners

prefer to learn through experience (Othman & Amiruddin, 2010). Furthermore, there are other categorizations that suggest that there are learners who prefer to learn through concrete experiences, abstract experiences, observing and watching others, or learning by doing (Kolb, 1984). Although the names and terminology for those preferences may differ, it is important that those preferences be taken into account during the learning process, as well as keeping in mind that "the key goal of education is to help all learners learn" (Zhang & Bonk, 2008). Hence, the instructors should develop learning environments and instructional strategies that support the diversity of students (Wilson, 2011). Zhang & Bonk (2008) argued, "The time is ripe for addressing learning preferences and interests through online tools and activities". Gülbahar & Alper, in their study titled ["Learning Preferences and Learning Styles of Online Adult Learners"] (2011) reported, " Although the applications of e-learning at universities have increased rapidly, little is known about learners' preferences and styles in online environments" (p.270). This indicates an urgent need to address learners' needs and differences through integrating emerging technologies to online learning, and that, in turn, will create effective learning that meets learners' preferences.

Given the importance of taking into account students' learning preferences in the educational process, as well as the deficiency of studies that have discussed the role of social media technologies in addressing students' learning preferences, the researcher in this study adopted Bonk and Zhang's R2D2 framework for online learning (Reading, Reflecting, Displaying, and Doing) in order to reveal how faculty members can use social media as a flipped classroom tool to address students' learning preferences. Furthermore, the R2D2 model is characterized by its inclusiveness of activities and tasks which could be incorporated in online

courses in order to create effective online learning for diverse learners' preferences, and which may be used and applied by social media.

Recently, many studies have discussed the relationship between usage of various technologies and gender. Some of these studies showed that females have a greater ability than males to use, communicate, and collaborate with each other using social networking (Kim & Yoo, 2016). Also, Ularu (2014) discussed gender differences in online media usage and concluded that there are other studies which showed that women are usually more interested in using social networks than men (p. 965). In contrast, Zhou & Xu (2007) discussed the role of gender in adoption of educational technology and reported that male instructors' expertise and confidence in the use of computers was greater than females' (p.151). However, another study conducted by Aifan (2015) found that there is no statistical significance between male and female Saudi students in using social media technologies in order to support their learning (p.157). In this study, the researcher also looked into differences between male and female faculty members in Saudi universities in terms of their attitudes towards using social media as a flipped classroom in teaching process and the factors that may prevent or limit each gender in using social media as a flipped classroom in Saudi universities. This, in turn, led the researcher to a deeper understanding of the extent to which employing social media for educational purposes in Saudi universities is beneficial and what factors might prevent or limit the implementation of the use of social media as a flipped classroom there.

1.3 Research Questions

1. What are faculty members' experiences in using social media in teaching in Saudi universities?
2. What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?
3. How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?
4. What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

1.4 Purpose and Significance of the Study

Many traditional classrooms are ignoring the role of students in instructional process. Therefore, we notice that the role of the student does not exceed that of mere listener to the lecture delivered by the teacher. In recent years, the integration of technology in education has played a significant role in transforming the teacher-based learning environment to a student-based learning environment. There are many educational approaches that have been applied in education, and there are also many studies that have proven the positive roles of these models. The flipped classroom is one of these approaches that has led to increased collaborative learning, as well as creating a learning environment which focuses on problem-based learning, so it has gained great popularity and attention in recent years (Brooks, 2014), and many studies have suggested embracing this approach (Al-Zahrani, 2015; Jamaludin & Osman, 2014).

Moreover, although in the educational process there is a significant focus on conveying difficult new material in the live classroom, "there is also time-shifting regarding what happens inside/outside the classroom, and instructors develop discussions and activities in the classroom that increase student engagement with learning" (Keengwe, Onchwari, & Oigara, 2014).

Due to the concerns and developments mentioned above, and because the majority of research and studies which have examined the flipped classroom have focused on the impact of the flipped classroom on students, this study differed from previous studies in that it focused on the extent of ability of faculty members in Saudi universities in employing social media as a flipped classroom tool. The study was applied to a large proportion of faculty members in Saudi universities. Therefore, this research study had an important role in determining faculty members' attitudes towards using social media as a flipped classroom in the teaching process, as well as the extent to which the faculty members in Saudi universities have sufficient experience to employ social media in teaching practices. It also helped us to determine the factors that prevent or limit the use of social media as a flipped classroom by faculty members in Saudi universities, and this, in turn, would provide Saudi universities with tangible findings about the extent to which applying social media for educational purposes. Hence, this study might help Saudi universities to restore their missions and visions and to stay in line with current technological development. According to Maor (2013) " With the increased use of Web2.0 and social media technologies for teaching, there is a necessity to frame our teaching in a more integrated and meaningful way" (p.532).

Furthermore, this research study adopted Bonk and Zhang’s R2D2 model for online learning (Reading, Reflecting, Displaying, and Doing) as a framework because this model both addresses the learners’ preferences to learn in online learning, as well as focuses on technologies,

activities, and tasks that should be incorporated in the online course in order to create effective online learning for the diverse learners. This, in turn, helped us to investigate both the learning activities that were conducted by faculty members in Saudi universities as a flipped classroom by using social media and the extent to which faculty members take students' learning preferences into account when applying technologies of social media in the flipped classroom. Therefore, this study provided a quick overview of education in Saudi Arabia and the extent to which education in Saudi universities was designed to suit all learners through the adoption of advanced technological tools.

1.5 Key Terms and Definitions

Social media:

One of comprehensive definitions of social media is defined by Carr & Hayes (2015), "Social media are Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others" (p.50).

Traditional classrooms:

The locations in which the learning process occurs within a tangible boundary, such as the school and the field trips (Khan, 1997, p.43).

Flipped classroom:

The flipped classroom is called "inverted classroom" as described by Maureen Lage, Glenn Platt, and Michael Treglia (2000). The flipped classroom is a pedagogical approach in which the students are provided with sufficient knowledge about the topic of an upcoming lecture outside of class, and then exploit the class time in interactive activities among students

(Herreid and Schiller, 2013; Keengwe, Onchwari, & Oigara, 2014; & Estes, Ingram, & Liu, 2014).

R2D2 model:

The R2D2 model was designed by Bonk and Zhang (2006, 2008) as the model for online learning in order to guide the instructors to create and apply various activities to address diverse learner preferences in online or mobile learning. R2D2 refers to the four categories of learning activities: Reading, Reflecting, Displaying, and Doing. The R2D2 model "provides a framework for more engaging, dynamic, and responsive teaching and learning in online environments" (Bonk & Zhang, 2008, p.249).

Learners' preferences:

According to Merriam-Webster.com, the word " preference" means "something that is liked or wanted more than another thing: something that is preferred". Learning preferences are the way in which learners prefer characteristically to learn. For example, a visual learner prefers to learn by the use of pictures, graphs, etc.; an auditory learner prefers to learn by listening; a reading/writing learner prefers printed word and text; and a kinesthetic learner prefers to learn by the doing.

Faculty members:

They include all male and female faculty members and degreed and represent all different ranks (e.g., professors, associate professors, assistant professors, instructors, and teaching assistants, etc.), regardless of their fields and disciplines. It should be mentioned here that instructors and teaching assistants in Saudi universities may be assigned the task of teaching a course entirely, and this may be different from some universities in other countries which confine the task of instructors and teaching assistants to help the professor. Therefore, faculty

members in this study included professors, associate professors, and assistant professors as well as instructors and teaching assistants.

Saudi Universities: Saudi government-sponsored universities

1.6 Chapter 1 Summary

In this chapter, the researcher has given a quick view about the significant role of social media in different aspects of people's lives, how social media have been adopted broadly both at personal and institutional levels, as well as its role in implementing some pedagogical approaches. Also, this chapter discussed the difference between traditional learning methods and learning by flipped classroom, and the role of Saudi universities in keeping up with technological developments and employing modern trends in the educational process.

Moreover, this chapter discussed the research problem statement of this study through: 1) studying the revolution of technology and its integration into education, 2) reviewing studies that focused on the impact of the flipped classroom on the students, 3) technological diversity and online platforms that have been embraced for implementing the flipped classroom, 4) and the importance of various technologies in addressing students' learning preferences.

The chapter also discussed the four research questions. In addition, purpose and significance of the study have been discussed by providing tangible findings about use of various technologies, modern learning styles and taking into account students' learning preferences in Saudi universities.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The researcher reviewed the literature and studies related to using social media in flipped classrooms. The literature review explored the topic from several aspects: (a) background and definitions of social media, (b) importance and role of social media in education, (c) gender differences and social media technologies usage, (d) definition and importance of flipped classroom in educational process, (e) some theoretical foundations to support the use of the flipped classroom, (f) the role of the flipped classroom in improving instruction and learning, (g) diversity of technology tools and online platforms utilized in the flipped classroom, (h) Bonk and Zhang's R2D2 Model that was adopted as framework for this study through focus on the various online learning activities for the diverse learners, and (i) the theory of multiple intelligences that used as support for idea of Bonk and Zhang's R2D2 Model. All these elements work together to cover most aspects related to importance of using social media in flipped classroom.

2.2 Social Media

2.2.1 Definition of Social Media

In recent years, there has been a rapid evolution in social media which not only support collaboration and communication, but also have become important and ubiquitous for exchanging experiences and knowledge among people (Kane & Alavi, 2014; Asur & Huberman, 2010). Nowadays, when we ask a group of people about their definition of social media, we may receive responses that focus on a list of social media tools such as Linkedin, Facebook, and Twitter. These definitions and the like, which define media by exemplars, are often met with criticism because they " limit our ability to develop broad, robust theories, as a theory of

interaction on Twitter remains utile only as long as Twitter remains stable …"(Carr & Hayes, 2015, p. 47).

Many definitions of social media which typically emerge view social media as digital technologies and emphasize user-generated content or interaction. Social media have also been described as an outlet through which content, insights, opinions, and experiences are shared (Kaplan & Haenlein, 2010; Lewis 2010;Terry, 2009; Hunter, 2013,p.23). In addition, Russo, Watkins, Kelly, and Chan (2008, p.22) defined social media as “those that facilitate online communication, networking, and/or collaboration” (Carr & Hayes, 2015, p. 48), referring to the focus on the nature of message construction in social media.

Additional definitions of social media have given the concept a broader scope within public relations; according to Kent (2010), social media can be seen as “any interactive communication channel that allows for two-way interaction and feedback"(p. 645), and this means that social media will increase interaction and engagement among members. This is consistent with Coman & Paun's definition (2010) that "Social media are the various forms of user generated content and the collection of websites and applications that enables people to interact and share information online"(p.46). Perhaps the definition which was offered by Carr and Hayes (2015) provides us a more comprehensive understanding of the concept of social media "Social media are Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others" (Carr & Hayes, 2015, p. 50).

It is clear from this definition that social media create persistent online places for messages so that we can create and transmit messages regardless of which individuals are online.

Moreover, social media allow individuals to perceive themselves as interacting with others even without receiving responses from others. For example, celebrities on Facebook or Twitter may perceive social connectedness even when nobody is responding to their messages (Li & Li, 2014, and Carr & Hayes, 2015).

Regardless of the evolution of the definition of social media, it is agreed that all social media focus on interacting and sharing information between people through websites, applications, or online platforms synchronously or asynchronously.

2.2.2 Importance of Social Media in Education

The rapid growth of social media has played a significant role in their increased popularity and usage. According to Fox, Barry, & Colbert (2016), "Data from the 2014 Pew Internet Project show that 74% of adults who are online use social networking sites, including 49% of adults aged ≥65 years"(p.1978). This is consistent with the conclusions of Tess (2013), Everson, Gundlach & Miller (2013), and Lerman & Ghosh (2010), who confirmed that it is undeniable that social media have become a fundamental part of personal life because, through the use of social media, people have opportunities to generate content, communicate, and collaborate with each other. Moreover, social media are appropriate places through which a particular identity is projected and relationships are created, making giving up social media, in light of this growth, which is unprecedented, and returning to the past, which lacks all of these features, impossible for most people (Burbules, 2016; Lenhart, Purcell, Smith, & Zickuhr, 2010).

Social media are not confined to specific fields or disciplines. They serve all fields, whether medical, business, marketing, or education. According to Fox, Barry, & Colbert (2016), "Many medical journals are now using social media campaigns to help disseminate medical information beyond the pages of their journals to a potentially broader audience" (p. 1978). Also,

social media may serve the medical field as an educational platform through which health practitioners can share new research findings. Furthermore, social media have played a significant role in advertising and promotions in the marketing fields, as well as in co-creating marketing content with companies (Hanna, Rohm, & Crittenden, 2011). This is evident in BMW's campaign success, which resulted from incorporating the Internet in its advertising, which, in turn, formed a strong relationship between BMW and its audience, creating a positive impact on the company (Moon & Herman, 2002).

The educational field is also not isolated from social media. Rather, it is perhaps one of the fields that has most readily incorporated the use of social media and conducted research and studies that attest to the importance of social media in the learning and teaching process. Nowadays, a knowledge-based society with different generations of learners needs different ways of learning (Zhang & Bonk, 2008, 2010) in order to both keep up with the knowledge explosion and overcome impediments which hinder learning, not to mention the informal learning that has started to emerge in work and life contexts, either incidentally or by choice (Dabbagh & Kitsantas, 2012). Therefore, we are facing a new era which requires us to free all temporal and spatial restrictions on learning. Given the important role of social media in education, many instructors have started to look to it to mediate and reinforce their instruction as well as to create interactive learning environments (Tess, 2013). Also, social media have a significant role in creating a forum for collaboration, which in turn fosters teamwork, the exchanging ideas among learners, and increases the acquisition of knowledge (Burbules, 2016). Furthermore, social media reinforce the students' feeling of connectedness to their peers, especially when using social media as part of a class, and this in turn increases students'

confidence and eliminates fear and anxiety of discussions that might be in traditional classroom (Arnold & Paulus, 2010).

Many experimental studies have proven the important role of social media in the educational process. For example, Williams & Jacobs (2004) explored the role of blogs as learning spaces in the higher education. The study asserted that blogs helped students to learn from each other through exchanging knowledge and interacting with peers online rather than on campus. These findings are consistent with another study carried out by Hong (2008) about educational use of blogs in U.S. education. The study also asserted that blogs have a significant role in enhancing communication and critical thinking and encouraging collaborative learning among students. In addition, Abdul-rahman et al. (2016) discussed the use of social media among students for educational purposes. The study was implemented at Faculty of Computing, Universiti Teknologi Malaysia (UTM) (as named in the article) with 235 undergraduate students. The study concluded that social media use for teaching and learning purpose has a positive role in creating active learning, which, in turn, facilitates and enhances student's learning.

Furthermore, social media have played an important role in improving students' achievement compared to those who rely on traditional approaches in their learning. Amry (2014) discussed the impact of learning by the use of Whatsapp mobile learning activities on students' achievement compared to the students who learn only by a traditional approach in the classroom. The study was conducted at Taibah University, Saudi Arabia and proved that the Whatsapp mobile learning activities are effective in improving students' achievement, not to mention the app's role in allowing students or instructors to create groups through which they can exchange images, videos, text messages, etc. between instructors and their students, and among students.

From the above, it is clear that social media are not mere tools or applications used only for entertainment purposes; rather, they are used ubiquitously, including in business, medical, and educational fields. They have also played a significant role in creating attractive educational environments and have helped in enhancing and developing for teaching and learning.

There are many learning theories that support the use of social media as a pedagogical choice, theories such as situated learning, which views learning as set in a participatory social context. According to Lave and Wenger (1991), "situated learning extends the model of knowledge construction by proposing that learning is situated in a specific context and embedded in a particular social and physical environment" (Tess, 2013). Another, activity theory, returns to the work of Lev Vygotsky, and focuses on "the dynamic relation among technologies, discourses, and social relationships; each element is seen in interaction with the others" (Burbules, 2016, p.551) and can be applied by social media to teaching practices (McLoughlin & Lee, 2010).

Given that most learning experiences are a combination of formal and informal learning, social media have the inherent ability to enable informal learning experiences that became a vital element of education for all learners in the educational process. Consequently, many universities have begun to focus on the use of social media through workshops that are offered to graduate students and faculty (Selwyn, 2007; Burbules, 2016). Because of the rapid evolution in social media and the willingness of so many people to use them, it is pressing to investigate how to use and integrate social media in education (Vanwynsberghe, Verdegem, 2013). Therefore, we should be aware that employing social media does not mean merely using them during the educational process; we should also know which social media should be used and why. One of the frameworks that is adapted to the critical use of new media technologies developed by Jeff

Share, Tessa Jolls, and Elizabeth Thoman (2004) focuses on five key questions: 1) Who has created the message? 2) What creative techniques are used to attract the attention? 3) How many different people understand this message differently? 4) What lifestyles, values, and points of view are represented this message? 5) Why is the message being sent?(Vanwynsberghe & Verdegem, 2013). This framework is too restricted for social media, as seen in Vanwynsberghe & Verdegem (2013, p.3). Hence, understanding the characteristics of user activity and how social media can affect them plays a key role in the choice of appropriate social media (Lerman & Ghosh, 2010).

Despite the important role social media have in creating interactive learning which allows students to communicate both with each other and with their instructors from different locations and in different ways, and although there is also a noticeable presence of many of these technologies used frequently by college students (Junco & Cole-Avent, 2008), there is a shortage of research specifically about the use of social media for educational purposes (Greenhow, 2011). Therefore, in order to achieve the desired objectives, further research on the use of social media for educational purposes and how to appropriately identify their most effective uses, immediate future studies should be conducted. The researcher in this study focused on faculty members' experiences in using social media in teaching in Saudi universities. This study adopted the use of social media in the flipped classroom because of the technological diversity that emerged in the implementation of flipped classroom, which will be discussed in a following flipped classroom section. Moreover, one of five key questions that was developed by Jeff Share, Tessa Jolls, and Elizabeth Thoman in order to use new media technologies, and that was mentioned above, focuses on the differences of people in the learning process. This confirms that learners are different both in how they learn and the preferences they have in the learning

process. Because the main goal of education is to create learning for all learners, the researcher in this study adopted the R2D2 model that addresses students' different learning preferences. This model includes many activities that will be discussed later in the Bonk and Zhang's R2D2 Model section, activities which could be applied by social media.

2.2.3 Gender Differences and Social Media Technologies Usage

Discussing gender differences in using various social media technologies has a significant role in representing the relationship between technology and its users, as well as showing how men and women use these technologies (Ularu, 2014, p.961). There are many studies focused on the impact of gender differences in the use of social media and technologies in learning and teaching.

Kim & Yoo (2016) conducted the study titled "Age and Gender Differences in Social Networking: Effects on South Korean Students in Higher Education". One of the purposes of this study was to know the effects of gender differences on using social networking sites (SNS). The study was applied to six classes of five different universities in South Korea. Mann-Whitney U-tests were used to compare gender differences in the use of social networking sites. This study found that females have more ability than men in studying, communicating, and collaborating each other through using social networks. These findings are consistent with the study results of Campbell and Varnhagen (2002) that concluded that women have ability to utilize technology in order to improve their teaching and increase interaction among learners. In addition, women prefer approaches that focus on communications, as well as spending much time on instruction.

Moreover, Ularu (2014) discussed gender differences in online media usage through reviewing two studies; one of these studies focused on the impact of gender differences in the usage of media platforms in order to watch, listen, or post photo or video materials online. The

study revealed that women were more interested than men in using social networks. This study also concluded that men prefer photo-video content more than reading or writing, whereas women prefer the use of text through reading or generating content on social networks.

Although women's abilities in integrating and employing technologies in the educational process in order to create effective learning environments, there are some impediments that may hinder women from adopt technologies with their learners. Zhou & Xu (2007) carried out the study at a large Canadian university in order to know the technology adoption in post-secondary teaching and the role of gender in that. In the study, they revealed that although females have more ability than men to integrate student-centered pedagogical approaches, they did not have adequate confidence and experience to employ computers in teaching. In contrast, men have the ability to learn and practice technology form their own experience (p. 140).

On the other hand, Aifan (2015) carried out the study to investigate Saudi students' attitudes towards using social media to support their learning. The study was conducted at King Abdul-Aziz University, Saudi Arabia. One of the hypotheses of this study was to learn if there is significant difference between Saudi male and female students at King Abdul-Aziz University in two thing: Saudi students' attitudes towards using social media to support their learning; the obstacles that may impede them to use social media in learning. The study concluded that there is no difference between male and female Saudi students' attitudes toward using social media in order to support their learning, whereas there is a difference between male and female Saudi students in terms of the obstacles that impede them from using social media in learning. The results showed that male students have encountered more obstacles than female students during the use of social media in learning. These findings are consistent with the results of the study carried out by Anduwa-Ogiegbaen & Isah (2005) in the University of Benin, Nigeria, to

investigate how faculty members use Internet for instructional purposes, and they concluded that there were no significant difference between males and females in the use of the Internet for instructional purposes.

It is clear from the above that there is a discrepancy among studies in gender differences and the use of technologies. As a result, the researcher in this study discussed differences between male and female faculty members in Saudi universities in terms of their attitudes towards using social media as a flipped classroom tool in the teaching process and factors that may prevent or limit Saudi faculty's social media uses in flipped classrooms. This in turn helped the researcher to reveal deep faculty members' attitudes towards using social media in flipped classrooms, in addition to knowing the impediments that may hinder each gender from using social media as a flipped classroom tool in Saudi universities.

2.3 Flipped classroom

2.3.1 Definition and Importance of Flipped classroom

In many traditional classrooms, the students usually listen to a lecture, which is sometimes followed by a short discussion. The teacher is the axis of the educational process, which focuses on filling the students with information through memorization. Then, outside the classroom, the students are responsible for solving problems and applying knowledge that was acquired in class although there exist many difficulties and challenges that may hinder them from reaching suitable solutions.

The flipped classroom has a radically different way of shaping the learning process. It prepares the students for an upcoming lecture outside of class through providing them with sufficient knowledge in order to be engaged inside the class (Keengwe, Onchwari, & Oigara, 2014). The flipped classroom is arising as a new approach used to enhance and improve learner

retention, and to exploit class time efficiently in engagement and collaborative activities among students (Estes, Ingram, & Liu, 2014). Moreover, the flipped classroom has a significant role in increasing the positive role of the learner during the educational process. Therefore, it represents a true student-centered learning environment that merges different learning activities and strategies during class time, and this, in turn, allows learners to spend time during class on problem-solving, critiquing, and synthesizing with their peers and with instructor (Honeycutt & Garrett, 2014). The flipped classroom typically provides learners access to pre-lecture online video that includes information about the topic of the lecture so that learners are prepared to participate during class time in more interactive and higher-order activities such as debates, problem-solving, creating, and synthesizing (Foertsch et al., 2002; Bergmann, Overmyer, & Wilie, 2012; Zappe et al., 2009; and Davies et al., 2013). In addition, in the flipped classroom model, instructors are responsible about preparing students for class by applying appropriate teaching strategies, and students are responsible for their own readiness to discuss and contribute to solving the problem during class time. This means that the flipped classroom demands more of both learners and instructors, and the roles and responsibilities of instructors and learners are proactive. (Berrett, 2012; Zhang, Wang, & Zhang, 2012).

It should be mentioned here that Bishop & Verleger (2013) defined the flipped classroom as an educational technique that consists of two parts:

- Interactive group-learning activities inside the classroom
- Direct computer-based individual instruction outside the classroom (p. 3)

In referring to this definition of the flipped classroom, activities should not be so broad that they include simply assigning reading outside of class and having discussions in class. Rather, the activities should require both human interaction and automated computer technologies, as illustrated in Figure 1, which defines the components of the flipped classroom.

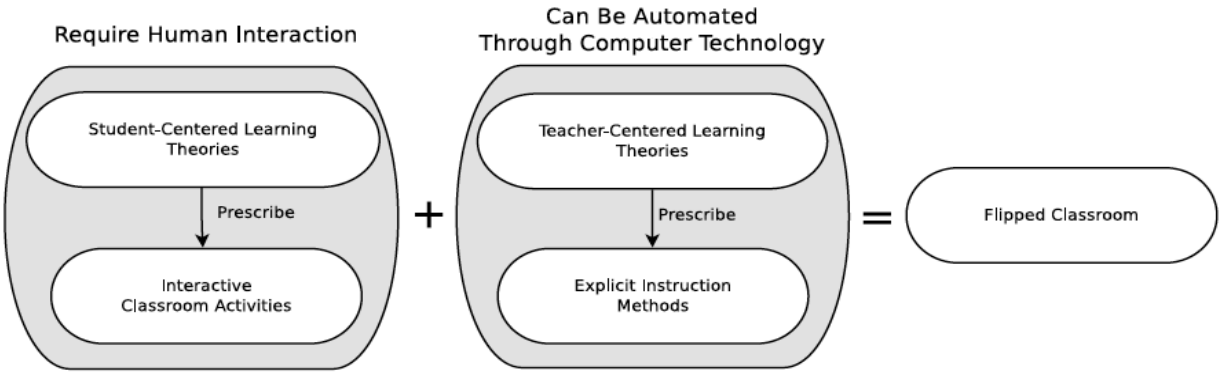


Figure 1: Components of Flipped Classroom (Bishop & Verleger, 2013, p. 4)
(Adopted with permission)

2.3.2 The Theoretical Foundation to Support the Use of the Flipped Classroom

There are several theories that support the use of the flipped classroom. For example, the theory of Bloom's revised taxonomy of cognitive domain is one of the conditions-based theories. This taxonomy consists of six levels of learning, ranging from recalling simple facts to creating new ideas when solving problems. The taxonomy is structured as follows:

- **Remembering**: In this level, the students try to recall information and retrieve previously learned material, as well as try to understand the basic elements of the content.
- **Understanding (comprehension)**: The students in this level try to construct meaning from what they have learned through interpreting, classifying, summarizing, or explaining learned content.
- **Applying**: The students try to stratify and practice acquired knowledge in real world.
- **Analyzing**: The students try to break materials or concepts into parts by determining some relations that relate the parts with each other. This occurs through collaborative work and debates with peers in order to generate critical thinking.
- **Evaluating**: The students make judgments on how far they have successfully learned, based on criteria and standards.

- **Creating**: Students are required to put parts together in a new pattern and create and produce new forms from acquired knowledge (Zainuddin & Halili, 2016; Richey, Klein, & Tracey, 2011).

According to Krathwohl & Anderson (2010), the lowest two levels of Bloom's revised taxonomy of cognitive domain (those of remembering and understanding) are practiced outside of class when applying the flipped classroom model in the education process (Zainuddin & Halili, 2016). The rest of the levels of Bloom's revised taxonomy include applying, analyzing, evaluating, and creating, which involve students' being able to conduct themselves inside of the classroom through collaborative activities and debates with peers and their teacher (Nederveld & Berge, 2015). Figure 2 illustrates the levels of Bloom's revised taxonomy when implementing the flipped classroom:

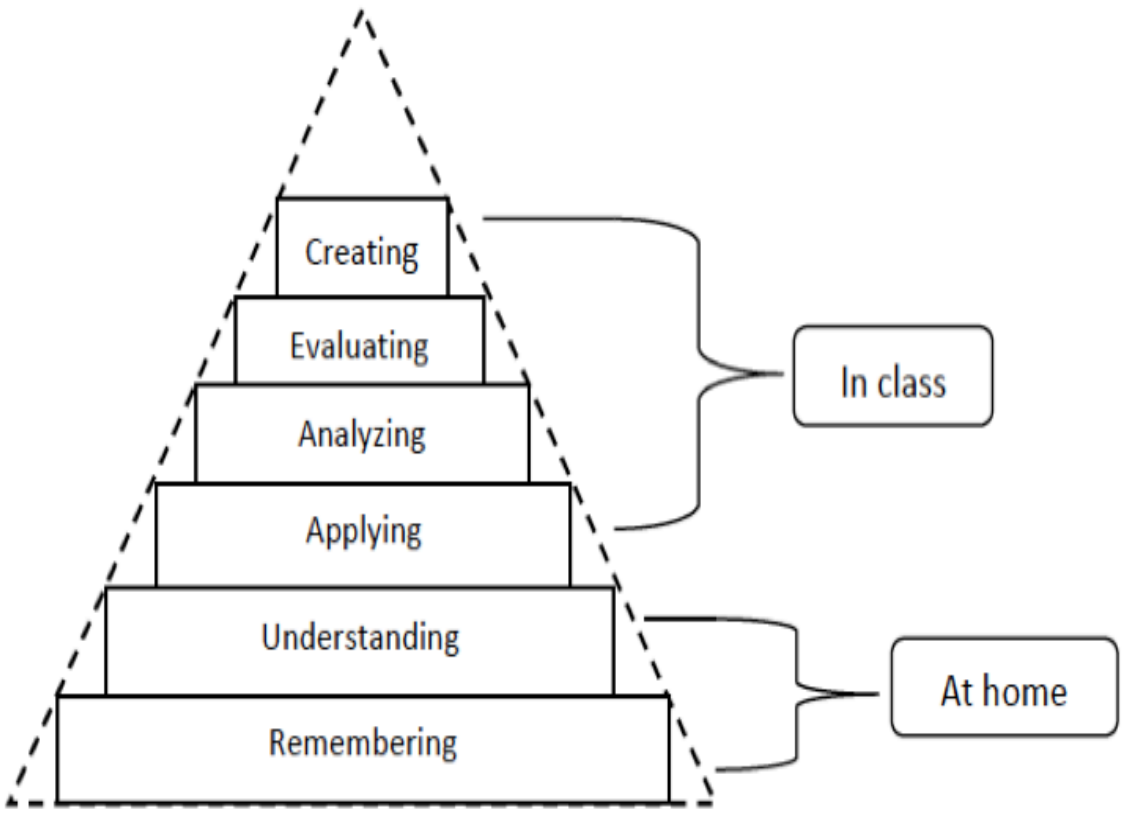


Figure 2: Bloom's Revised Taxonomy in the Flipped Classroom (Zainuddin & Halili, 2016, p. 323) (Adopted with permission)

Also, constructivist theory focuses on an intellectual process in which students can form new knowledge through combining previous experiences with new ideas. One of the principles of constructivist theory is that " Learning results from an exploration of multiple perspectives" (Richey, Klein, & Tracey, 2011. p. 130), and this, in turn, leads us to focus on collaborative learning environments that "allow learners to share and collaboratively reflect"(Hay & Barab, 2001, p.283). The flipped classroom has a significant role in creating collaborative learning through various activities, discussions, or reflections that are carried out inside class.

In addition, problem-based learning (PBL) could emerge during use of the flipped classroom through creating student-centered learning. According to Hoffman and Ritchie (1997), PBL, is

> A student-centered pedagogical strategy that poses significant contextualized, real-world, ill-structured situations while providing resources, guidance, instruction and opportunities for reflection to learners as they develop content knowledge and problem-solving skills (p.97).

In a study carried out by Tsai, Shen, & Lu (2015), they sought to determine the effects of problem-based learning with the flipped classroom (FPBL) on the development of students' learning performance. This study was applied to three groups: the first was taught by problem-based learning with flipped classroom (FPBL); the second used problem-based learning (PBL); and the third was taught by traditional education methods. This study asserted that the learning performance of students who were taught by FPBL was significantly higher than students' learning performance in the two other groups. This is indicative of the role of the flipped

classroom in creating a successful interactive learning environment through applying student-centered learning methods.

2.3.3 The Role of the Flipped Classroom in Improving Instruction and Learning

The use of innovative methods of instruction has an important role in helping students to learn and develop their learning skills (Tsai, Lee, & Shen, 2013). Therefore, it is not surprising that improved instruction and learning have resulted through the use of the flipped classroom. The flipped classroom has a significant role in increased interaction and engagement among peers and teacher, as well as shifting the responsibility for learning to students, thereby shifting the role of students from mere passive listener to active learner. Doyle et al. (2013) concluded that different innovative methods (including flipping the classroom) are desirable and preferred by faculty and students because they reinforce essential clinical skills in real life situations and increase student engagement (Meeting Abstracts, 2013).

Herreid and Schiller (2013) assert the importance of a flipped classroom through focusing on students' learning which combines student-centered active learning with content mastery through its application in the real-life situations (Jamaludin & Osman, 2014, p. 124). Also, through a series of studies focused on the flipped classroom in higher education, Aronson & Arfstrom (2013) emphasized the role of the flipped classroom in teaching practice. In one study conducted 2011 at the University of British Columbia, physics courses were investigated. The results were:

> The instructors, including 2011 Nobel Laureate Carl Wieman, found that in the experiment students in the flipped section increased attendance by 20% and that engagement, as measured by four trained observers, increased by 40%. Even more impressive, they found that students in the flipped course scored more than twice as well as students in the control group on a multiple-choice test measuring comprehension of the content in the final week1. Students also enjoyed the flipped experiment: 90% agreed that

> they enjoyed the interactive learning methods tried in the last week. The instructors concluded that using these active learning methods in a flipped course can improve both learning and engagement (Aronson & Arfstrom, 2013, p. 2).

Perhaps what best reinforces the results found in the previous study is another study that was carried out by Zhang, Ma, & Liu (2014). This study used a number of main research methods, such as questionnaire, literature review, interview, and action research, which were applied to two classes in Southwest University. The control group was taught by traditional teaching, whereas the experimented group was taught by employing the flipped classroom model. The findings of the study showed that the flipped classroom played a significant role in changing students' attitudes toward learning, as well as in improving students' performances and decreasing teachers' total workload. In addition, this study asserted the use of the flipped classroom as being significantly beneficial for students in higher education. This may be due to the ability of higher education students to take responsibility for applying the flipped classroom correctly.

Moreover, Pierce & Fox (2012) applied the flipped classroom model to a renal pharmacotherapy topic module. In this study, the students were prepared with video podcasts of lectures prior to coming to class, and then, in the classroom, students discussed patient cases. The study asserted that the students who attended a flipped classroom in a pharmacy-integrated therapeutics course performed significantly higher on the final examination than students who depended on instructor-dominated traditional lectures. This is consistent with the findings of the study that was carried out by Al-Zahrani (2015) titled "From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking," at King Abdulaziz University in Saudi Arabia, in order to investigate the impact of the flipped classroom on the promotion of students' creative thinking between two groups. Group

one utilized the lecture-based approach, whereas the other utilized the flipped classroom. The results suggested that "the flipped classroom may promote students' creativity, especially with regard to fluency, flexibility, and novelty" (Al-Zahrani, 2015). In this study, Al-Zahrani recommended the flipped classroom be equipped with adequate e-learning tools in order to prepare the students to utilize the flipped classroom.

Although there is great importance and benefit in merging and employing the flipped classroom in higher education, there are some challenges that may hinder the adoption of models such as this. These challenges were attributed to reasons, such as lack of student motivation to adapt to this type of learning (Greener, 2015; Aboraya & Alket, 2016) or a lack of facilities and Internet accessibility (Davies, Dean and Ball, 2013).

A number of these challenges may nonetheless be overcome through employing diverse technologies and online platforms through the use of mobile devices (Barber, 2015). As a result, my study plays a significant role in exploring in depth some other factors that prevent or limit the adoption of the flipped classroom in the educational process through studying to what extent the faculty members in Saudi Universities can employ social media in the flipped classroom.

2.3.4 Diversity of Technology Tools and Online Platforms Utilized in the Flipped Classroom

The diversity of technology tools and online platforms has played a significant part in expanding different pedagogical approaches. Flipped classrooms are not confined to specific technological tools. There are numerous technology tools or online platforms that have been employed in the flipped classroom, such as Blackboard LMS, Google Docs, Wikis, and blogs, which have assisted in creating an interactive learning environment through sharing videos, texts, pictures, and thoughts among students. A recent exploratory study conducted by Zainuddin & Halili (2016) on 20 articles from 2013–2015 in order to ascertain which technology tools or

online platforms have been used for implementing the flipped classroom. The results showed that, in fact, there are various technology tools or online platforms which were used. Table 1 illustrates the results of the study.

Source: (author, year)	Technology tools or Online Platforms
Davies et al. (2013)	MyITLab videos and software simulation
McLaughlin et al. (2013)	Echo360 Classroom Capture (Echo360 Inc., Dulles, VA), the Sakai Website, Integrated Learning Accelerator Modules (ILAM).
Talley and Scherer (2013)	Recorded tools, webcam, laptop, tablet device, or mobile phone. Blackboard® Journal page.
Love et al. (2014)	Online screencasts and LaTeX beamer package.
Roach (2014)	Blog, online software (http:// ed.ted.com), video sources adopted from: Khan Academy, Freakonomics; NPR: Planet Money; PBS: Idea Channel; Wall Street Journal: Opinion Journal.
Kim et al. (2014)	YouTube video, Blackboard LMS , Google Docs, and, Dropbox, Google Hangout.
Baepler et al. (2014)	A video message board, microphones, large-screen monitors, whiteboards, and wireless.
Kong (2014)	A tablet PC, Online pre-lesson learning and a Web-based word processor (Google Docs).
Missildine et al. (2013)	Interactive television.
Enfield (2013)	Course Website (http://www.jacobenfield.com/allThingsWeb)
Galway et al. (2014)	Course Website (http://www.NextGenU.org)
Hung (2015)	WebQuest
McGivney-Burelle and Xue (2013)	The TI-89 graphing calculator and WeBWork (an online homework system), Maple Worksheets, mathlets, videos, clickers, and e-textbooks.

Table 1: Technological Tools or Online Platforms in Flipped Classroom Research (2013–2015) (Zainuddin & Halili, 2016, p. 323) (Adopted with permission)

Given the widespread use of social learning platforms and their being available at any time and from any place, there are some countries which have started implementing flipped classrooms by use of various technology tools and social platforms. According to Wallace (2014), "the recent spontaneous and viral implementation of flipped classroom pedagogies and epistemologies has started to infiltrate the mainstream in British schools" (p. 293).

In addition, there are modern trends used for employing social media in the flipped classroom. For example, Bonnie Ferri, professor and associate chair for undergraduate affairs in Georgia Tech's School of Electrical and Computer Engineering, developed two MOOCs in conjunction with her class. She posts MOOC videos to the public and on-campus students. The on-campus students watch the videos on MOOCs and then report to class to conduct various activities (Raths, 2015). Furthermore, Wallace (2014) suggested that Edmodo, in conjunction with videos generated by teachers themselves, could be an online platform through which we can implement the flipped classroom. This study was furthered by another study that was carried out by Al-Harbi & Alshumaimeri (2016). In this study, the flipped classroom approach was applied through uploading videos on the Edmodo site. The learners in the experimental group in this study could learn through watching the videos on the Edmodo site. They also could add comments on the video in addition to posting questions and exchanging views and ideas with each other. The findings of the study asserted that there were positive attitudes towards using the flipped classroom strategy.

Moreover, Aboraya & Alket (2016) claimed that mobile applications as a platform in implementing the flipped classroom can support students' learning and enhance their engagement in the educational process, not to mention their active role in helping students to bear personal responsibility for accomplishing tasks.

Because of the active role of the use of diverse technologies in the implementation of the flipped classroom, the researcher in this study focused on the use of social media in flipped classrooms in Saudi universities. Besides that, diverse technologies can address learners' preferences of learning because the instructor, by employing a diversity of technology, can create activities that meet the preferences and needs of diverse learners. According to Zhang & Bonk (2008), "Already participatory technologies, including podcasts, wikis, blogs, and social networking software, all offer ways to align learning situations with learner preferences and informal learning experiences". This is what led the researcher in this study to adopt Bonk & Zhang's R2D2 framework (which will be discussed in the next section) for online learning (Reading, Reflecting, Displaying, and Doing) in order to reveal how faculty members can use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework.

2.4 Bonk and Zhang's R2D2 Model

2.4.1 The Various Online Learning Activities in Bonk and Zhang's R2D2 Model for Diverse Learners

It is important prior to beginning the review of Bonk and Zhang's R2D2 Model to clarify that the model is adopted in this study is completely distinct from the instructional design model R2D2 (Recursive, Reflective, Design, and Development), which was conducted at the NASA Johnson Space Center (Richey, Klein, & Tracey, 2011). Bonk and Zhang's R2D2 Model is not an instructional design model but rather is designed to help instructors and trainers in choosing diverse learning activities with appropriate technologies for creating effective online learning environments (Bonk & Zhang, 2008, p.250).

The Bonk and Zhang's R2D2 Model focused heavily on many ideas derived from some previous models and theories that focus on learning phases and types of learners, such as Kolb's learning cycle (1984), which mentioned that learning consists of four categories: concrete experiences, reflection and observation, forming abstract concepts, and testing in new solutions; Bernice McCarthy's 4MAT system (1987), which identified types of learners: innovative, analytic, common sense, and dynamic; and Fleming & Mills's VARK (1992a), which categorized learners into four types: visual, auditory, reading/writing, and kinesthetic. Although the R2D2 is very similar to the VARK method, the R2D2 method concentrates more on reflective activities, as well as merging auditory activities with the reading and writing quadrant (Bonk & Zhang, 2008, p.250-251).

The R2D2 model was developed by Bonk and Zhang in 2006 and was designed to address styles and preferences of student online learning. It also focuses on emerging technologies, activities, and tasks that should be incorporated in online courses in order to create effective online learning for the diverse generational learners (Zhang & Bonk, 2010). The R2D2 model, as is evident by its acronym, consists of four categories: Reading, Reflecting, Displaying, and Doing. The reading category addresses activities related to verbal or auditory learners; the reflecting category addresses activities related to reflective or observational learners; the displaying category addresses activities related to visual learners; and the doing category addresses activities related to kinesthetic learners (hands-on learning). Figure (3) illustrates four categories of R2D2 models. What should be noted here is that the R2D2 model is not linear, which means that learning events and activities do not necessarily move serially from reading to doing. Therefore, online instructors have an opportunity to use and apply the R2D2 model in appropriate ways to address the learners' preferences (Bonk & Zhang, 2008, p.13).

Exploring the R2D2 model for online learning activities to teach academic language skills is one of the studies that applied the R2D2 model. Cartner & Hallas (2009) conducted their study in the English for Academic Study (EAS) programme at Auckland University of Technology (AUT) through the use of activities including all categories of the R2D2. For example, in the reading category, there were a number of activities that were used in order to develop knowledge of academic words and how they are spelled and spoken correctly; in the reflecting category, students were asked to listen to audio recordings while providing their reflections about pronunciation and usage of the words; in the displaying category, student were provided with visual-based learning activities about the topic; in the doing category, students were asked to design a presentation for the class through which they would present and practice what they had learned. The findings of the study proved that there were positive results on the tasks that the students were assigned to do, which encouraged the facilitator here to push for the use of the R2D2 model in future semesters.

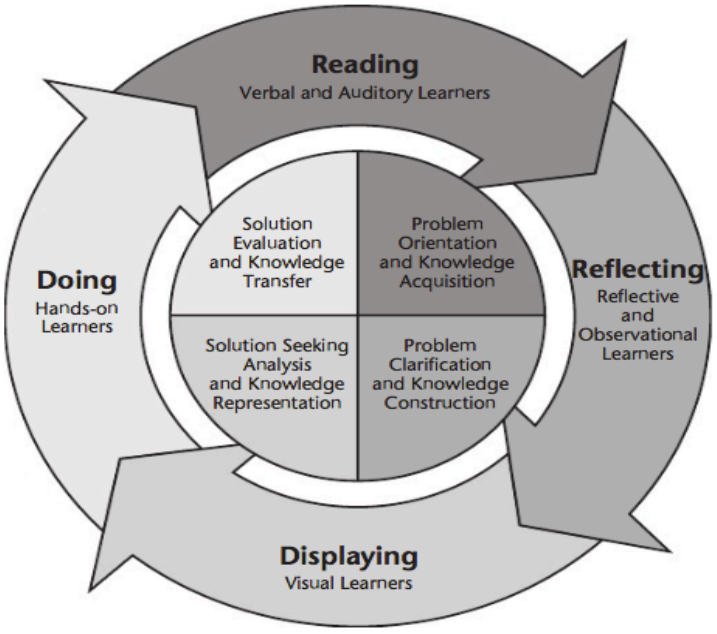


Figure 3: Categories of Bonk and Zhang's R2D2 Model (Bonk & Zhang, 2008, p.6). (Adopted with written permission)

Because of the active role of Bonk and Zhang's R2D2 Model in addressing students' learning preferences and because of the ease with which it can be applied in the educational process, this model was adopted in this study in order to determine the extent to which the faculty members in Saudi Arabian universities consider students' learning preferences when applying technologies of social media as the flipped classroom tools. Further details about the R2D2 model's categories will be discussed in the following section.

2.4.1.1 The Category of Reading

This category focuses on acquisition and exploration of knowledge through reading and listening to podcasts, so it addresses verbal and auditory students. There are many ways through which instructors in online learning can activate or apply this category whether through online reading materials or voice channels (Bonk & Zhang, 2006, 2008). Bonk and Zhang (2008) mentioned that there are twenty-five learning activities that focus on words and text, and these, in turn, can be applied to verbal and auditory learners in this category. What should be mentioned here is that activities in each category are not confined to the same category; they may also be used in others.

The activities in this category included Online Scavenger Hunt, Web Tours and Safaris, WebQuest, Guided Readings, and Discovery Readings. In addition, Bonk and Zhang (2008) emphasized that when choosing and designing such activities in online learning environments, there are many considerations related both to the time, cost, and risk for instructor, course developer, and moderator and to the ages of the learner and his ability to use the Internet. As a result, Bonk and Zhang (2008) tried to provide more details after each activity, including a description of the activity, the required skills for applying the activity, and some recommendations that should be taken into account.

2.4.1.2 The Category of Reflecting

Reflecting is the second part of the R2D2 that addresses observational and reflective learners (Bonk & Zhang, 2006, 2008). The learners in this category focus on observing and reflecting on learning activities. Furthermore, they need to concentrate carefully on their reading and asynchronous discussions with their peers in order to make appropriate reflections in response to others. The learners through online discussions have an opportunity to discover and think deeply about main points on a topic, and this may be rare, if not impossible, in traditional instruction. In addition, Bonk and Zhang (2008) noted that "Reflective and observational learners also try to observe and compare information from different viewpoints before making decisions or suggestions"(p. 118).

Bonk and Zhang (2008) also suggested twenty-five learning activities for learners in the reflecting category, as were applied in the reading category previously. Some activities that were applied in this category include: Field and Lab Observations, Online Discussion Forums and Group Discussions, Podcast Tours, Personal Blogs, Collaborative or Team Blogs, Synchronous and Asynchronous Discussion Combinations, and Small-Group Case Creations and Analyses. In addition, I believe that two MOOCs that were developed by Bonnie Ferri in conjunction with her class as a flipped classroom (Raths, 2015), as mentioned previously, have a significant role in enhancing learning in observational and reflective learners because they promote asynchronous discussions among the public and on-campus students, and this, in turn, leads to deep thinking about main ideas in topic.

2.4.1.3 The Category of Displaying

The displaying category addresses visual learners through providing videos, charts, animation, pictures, etc. It also includes mathematical and scientific symbols as well as

geometric shapes in chemistry, mathematics, and physics. The visual displays and tools have a significant role in helping learners to both connect and understand more deeply the concepts that were acquired in the reading category (first quadrant of R2D2) and to reflect on their uses (the second quadrant of R2D2) (Bonk and Zhang, 2006, 2008). Therefore, although the displaying category addresses visual learners, it may serve other categories of R2D2.

There are many activities that were suggested by Bonk and Zhang for this category, such as Videostreamed Lectures and Presentations, Videostreamed Conferences and Events, Interactive News and Documentaries, Virtual Tours, Video Modeling and Professional, and Charts and Graph Tools (Bonk and Zhang, 2008). These activities and others serve an important role in illustrating concepts more accurately as well as enhancing learning in the real world. Additionally, they have the ability to attract the learner's attention, so according to Bonk and Zhang (2008) "For many educational professionals and students, visual learning might be deemed more exciting and glamorous than reflective or verbal learning" (p. 268). This does not mean that other learning styles are less important, but visual learning is more popular and familiar than others.

2.4.1.4 The Category of Doing

The doing category addresses hands-on and kinesthetic learners. In this category, the learners prefer to apply their previously acquired knowledge in the real world. The instructors, through the use of online learning, can provide many activities that situate the learners in authentic problems. An example of this would be the use of cases through which the learner can conduct analysis and compare the findings with other cases. Also, the learner can obtain information about historical events by conducting interviews with people who lived in that period. In addition, the hands-on learners, by actually doing activities, have an opportunity to

share and reflect upon their experiences, unlike the cases with mere reading, listening, or seeing visual events. According to Klahr et al. (2007), hands-on science enhances learning "because it provides additional sources of brain activation via kinesthetic involvement, and because its intrinsic interest increases motivation and engagement" (p. 183).

Bonk and Zhang (2008) discussed twenty-five activities that could be applied to hands-on learning such as, Video Scenario Learning, Mock Trial or Fictional Situations, Real-Time Cases, Online Science Labs and Simulations, and Learner Podcast Activities, Events, and Shows. These activities and other have a significant role in increasing the positive role of the learner during the educational process because the learner can take advantage of a course, and at the same time can create his own unique products and ideas.

2.4. 2 Some Key Considerations When Employing the Bonk and Zhang's R2D2 Model Activities in Online Learning

- The R2D2 model, which was designed by Bonk and Zhang (2006), is not intended to be an instructional design model, but it has been used to guide the design of e-learning or online learning by practitioners and instructors. The aim of the R2D2 model is to help instructors, moderators, and course developers to choose appropriate learning activities, depending on students' learning preferences in order to create effective online learning.
- The R2D2 model consists of categories: Reading for verbal or auditory learners; reflecting for reflective or observational learners; displaying for visual learners; and doing for kinesthetic and hands-on learners. The R2D2 model is not linear, and thus the users can start from any category they want. Also, it is not required to move sequentially through these categories.
- Each category of the R2D2 has twenty-five activities as designed by Bonk and Zhang (2008) in their book titled *Empowering Online Learning: 100+ Activities For Reading,*

Reflecting, Displaying, and Doing, but activities in each category may be used in one or more of these categories. Appendix A shows learning activities for each category as they are appear in Bonk and Zhang's book, along with some suggestions for applying these activities.

- There are many elements related to the instructor, course developer, and moderator that should be taken into account when choosing online learning activities, such as time, cost, and risk, as well as the ages and abilities of learners to use these activities.

2. 5 The Theory of Multiple Intelligences (MI) and R2D2 Model

Learners, according to the theory of multiple intelligences, all have several ways of learning, but they show their differences from one another in the strength and weakness of these intelligences (Viens & Kallenbach, 2004; Menevis & Özad, 2014). Technologies and pedagogical methods have a significant role in enhancing and improving these intelligences. According to Mohamad et al. (2014), "Each individual has a different level of intelligence and this intelligence can be increased through any suitable education" (p. 786). The theory of multiple intelligences was adopted by Howard Gardner in 1983 and originally included seven intelligences, which were later expanded to nine.

- The Verbal-Linguistic Intelligence: Learners who excel in this type prefer reading, word games, public speaking, and creative writing.
- The Logical-Mathematical Intelligence: This type focuses on the thinking process and a logical rationale. These learners have the ability to manipulate numbers, and understand and interpret abstract symbols.
- Bodily/Kinesthetic Intelligence: This learner prefers to learn by doing and simulation.

- Musical Rhythmic Intelligence: Learners who excel in this type gravitate to various sounds in their environment. They prefer to listen to music during problem-solving.
- The Visual-Spatial Intelligence: These learners prefer watching before doing; they also have the ability to remember the location of thing.
- Naturalist Intelligence: Learners who excel in this type prefer the natural environment and enjoy watching natural scenery. They are interested in classification and discrimination among living things, such as plants and animals.
- The Intrapersonal Intelligence: These learners focus on the understanding of themselves and knowing what they want to do, as well as which things should be avoided. Therefore, they focus on the meaning and purpose of learning.
- The Interpersonal Intelligence: This type focuses on personal interaction with others. Therefore, the learners who excel in this intelligence have the ability to understand and deal with others (McCoog, 2007).
- The Existential Intelligence: These learners ponder deeply about human existence such as life and death, as well they prefer philosophical opinions and exchanges.

Online learning and social media tools play an important role in enhancing and improving Multiple Intelligence activities. For example, in the study carried out by Mohamad et al. (2014) titled "Online Multiple Intelligence Teaching Tools (On-MITT) for Enhancing Interpersonal Teaching Activities, "they found that On-MITT motivates instructors to employ online teaching in their classes because it provides various online tools.

Based on what was previously reported, we can conclude that there is a strong relationship between multiple intelligences theory and the R2D2 model. We can collapse two of

the multiple intelligences—the Verbal/Linguistic Intelligence and the Musical/Rhythmic Intelligence—into the reading category of R2D2 model; four of the multiple intelligences—the Logical-Mathematical Intelligence, the Intrapersonal Intelligence, The Interpersonal Intelligence, The Naturalist Intelligence, and The Existential Intelligence—into the reflecting category; The Visual/Spatial Intelligence into the displaying category; and The Bodily/Kinesthetic Intelligence into the doing category, as appears in figure (4). Finally, it is worthwhile to note that the majority of activities of multiple intelligences theory focus on the reflecting category, and this is what distinguished the R2D2 model from Fleming & Mills's VARK model, as discussed previously.

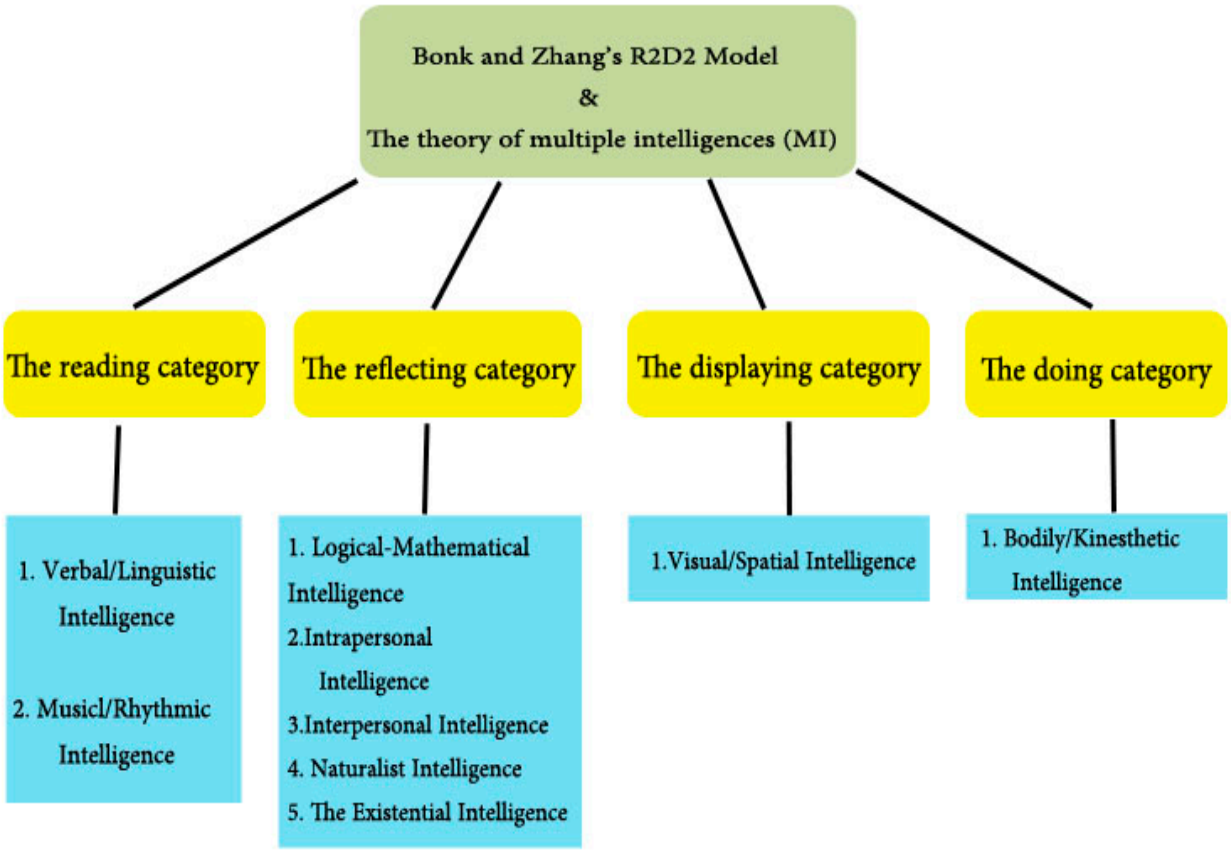


Figure 4: The Relationship Between Multiple Intelligences (MI) and R2D2 Model

2.6 Chapter 2 Summary

The literature review in this study discussed three overarching main topics: social media, flipped classroom, and Bonk and Zhang's R2D2 Model. In the social media section, the researcher has reviewed a number of literary viewpoints about definitions of social media and role of social media by discussing a number of previous studies that asserted the importance of social media in education by creating collaboration and exchanging ideas among learners as well as reinforcing students' confidence and feeling of connectedness to their peers. Also, many learning theories such as activity theory and situated learning support the significant role of social media as a pedagogical choice. Furthermore, discrepancy among studies in the relationship between social media technology usage and gender was discussed in order to reach a deeper understanding of the factors that may prevent or limit each gender to use social media as a flipped classroom tool in Saudi universities. In the flipped classroom section, definition and importance of flipped classroom were discussed through reviewing components of the flipped classroom according to previous studies, and the theoretical foundation, such as Bloom’s revised taxonomy of cognitive domain and constructivist theory that support the use of the flipped classroom as a suitable pedagogical choice. In addition, the researcher discussed the diversity of technology tools and online platforms that appear modern trends for employing social media in the flipped classroom. In Bonk and Zhang's R2D2 model section, the literature review gave the whole concept about categories of the model that were designed to address styles and preferences of student online learning through emerging technologies and activities in online courses for creating effective online learning. Also, a number of key considerations about Bonk and Zhang's R2D2 model were provided in this literature review to give the reader knowledge and reason for applying Bonk and Zhang's R2D2 model correctly.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter reports the research design, including the rationale for mixed methods, population and sampling, data collection instruments, validity and reliability of data collection instruments, construction of the questionnaire, interview protocol, data collection procedures, and data analysis techniques.

3.2 Research Questions

1. What are faculty members' experiences in using social media in teaching in Saudi universities?
2. What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?
3. How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?
4. What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

3.3 Research Design

Mixed-method research was employed in this research study to investigate the set of research questions. Utilizing both quantitative and qualitative research methods, the study began with a broad view of the findings by using the quantitative method and then goes into detailed views of participants (Creswell, 2003, p.21). Therefore, there were two methods of data collection: quantitative and qualitative. In the quantitative method, the questionnaire was

employed as a data collection tool in order to explore the whole picture about the topic and research questions. In the qualitative method, interview protocol was employed as the second data collection instrument. The interviews have many advantages. According to Guerra-López (2008), "They [*interviews*] have a better participation rate, and they allow the interviewer to read facial expression and body language, clarify responses, ask follow-up questions, and sense areas for further inquiry" (p.170). Therefore, the interview helped get at a deeper understanding of the research questions by moving from question to question. For these reasons, this research study employed a mixed-method design.

3.4 Population and Sample

The population of the study were faculty members in 28 Saudi universities (Saudi government-sponsored universities), approximately 65,000 in total, according to statistics of the Ministry of Education in Saudi Arabia (2016). The study recruited participants to include all degreed faculty members, both male and female, representing all different ranks (e.g., professors, associate professors, assistant professors, instructors, and teaching assistants, etc.), regardless of their fields and disciplines. Also, this study included Saudi faculty members who are currently completing their studies overseas and are affiliated with Saudi universities as instructors or teaching assistants.

Because the population of this study is huge (Population Size (N)= 64,689 faculty members according to the Ministry Deputyship for Planning and Information, 2016), the researcher used Krejcie and Morgan's (1970) formula to determine the appropriate size of the sample for this study (Kenya, 2012; Krejcie & Morgan, 1960).

$$s = X^2 NP(1-P) \div d^2 (N-1) + X^2 P(1-P)$$

Where

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (e.g. 1.96 for 95% confidence level)

(1.96 X 1.96 = 3.841).

N = Population Size

P = Population proportion (expressed as a decimal and assumed to be .50 (50%)) since this would provide the maximum sample size).

d = Degree of accuracy expressed as a proportion (.05); It is margin of error.

The required sample size of this study (Population Size (N)= 64,689 faculty members according to the Ministry Deputyship for Planning and Information, 2016) was 381 using the Krejcie-Morgan-sample-size-table or 384 according to Krejcie and Morgan's (1970) formula with 95% confidence level and 0.05 margin of error.

The number of participants who were intended to be recruited for this study was approximately 384 participants. Social Networking sites (SNS) were employed in this study to reach the required sample size. According to Mansour (2015) about the use of SNSs by faculty members, the study asserted SNSs have been embraced largely by faculty members for communicating and sharing information with peers. This study is consistent with another study that was carried out in India by Singh et al (2015) about the use and effects of SNSs on faculty members and concluded that "more than half (56.25%) of the total respondents use SNSs" (p.6). Furthermore, Akcayır (2017) concluded through a study carried out on 658 faculty members from eight different state universities in Turkey that there was a large proportion of faculty members who possess SNS accounts. Faculty members in Saudi Arabia are not any different from others in the field in the use of social media. For example, Alasfor (2016) concluded that

51.2% of university instructors in Saudi universities used social media at the current time of his study or in the past, not to mention 87% of the university instructors decided to use social media in the future (p. 86 - 87). Given the role of social networking and its use by a large proportion of faculty members, the researcher in this study used social media, such as Twitter, WhatsApp, Facebook, etc. as the recruiting tools to reach the required sample size of the population for this study (as will be discussed later in data collection procedures).

Furthermore, the researcher recruited eight faculty members in Saudi universities for interview. The participants in the interviews were of both genders and had different academic ranks. Also, the researcher tried to find interviewees who have different years of teaching experience in higher education because this leads to better understanding of faculty members' general experiences in using social media in teaching practices and faculty members' attitudes towards using it in flipped classrooms. The researcher recruited interviewees depending on specific criteria and ways as will be discussed later in data collection procedures.

3.5 Data Collection Instruments

One of the research instruments in this study was the questionnaire that consisted of five sections, each having a number of items related to research questions in this study using the quantitative method. Also, there was an interview protocol as a second data collection instrument to support the quantitative instrument and reach a broader understanding of the research questions. Although Arabic is the primary language in Saudi Arabia, the questionnaire and interview questions were presented to participants in both Arabic and English. Also, these instruments were translated into Arabic. They were sent to two experts in linguistics who are fluent in both languages and have good experience in teaching in both languages. When the questionnaire was ready in both languages and was valid and reliable, it was submitted to Wayne

State University's Institutional Review Board (IRB) for approval to use the questionnaire. The questionnaire was designed and adapted to the online survey by use of the Qualtrics survey website provided by Wayne State University through which the link was shared with participants. In the interview protocol, there were some interviews with eight faculty members affiliated with Saudi universities; permission to record these interviews will also be sought.

3.5.1 Instrument Validity and Reliability

Reliability and validity are essential concepts which should be considered when constructing a test or research instrument because they establish confidence in the study results. According to Guerra-López (2008), " This confidence can be established if the test measures what it is supposed to measure—that is, it is valid; and it must consistently yield the same results for a given individual—that is, it is reliable" (p. 182).

Content validity and face validity are important elements when constructing a questionnaire. There are many important criteria and guidelines recommended by experts in order to construct the questionnaire appropriately. These guidelines were taken into account by the researcher during the design of the questionnaire, such as choosing the appropriate question format for each item, using familiar words for respondents, arranging the questions in an appropriate manner so that each question is the context for the next question, asking one question in each item, using clear concrete words that clearly specify the meaning and relationship to the problem, and posing questions that are required: nothing more, noting less (Dillman, Smyth & Christian, 2014; & Guerra-López, 2008).

In this study, establishing content validity began with a thorough review of the literature to ensure the questionnaire reflected a relevant and complete set of items. Additionally, the researcher conducted a pilot study of the questionnaire used in this research in order to measure

its content validity and face validity by sending the survey to four experts in Instructional Technology. Also, an Arabic version of the questionnaire was sent to three Saudi faculty members in order to measure content validity and face validity. After obtaining feedback from the experts, the questionnaire was revised following their reviews. In the questionnaire's face validity, there were some suggestions, such as adding other categories to some factors in demographic information and changing large categories of age in demographic information to a more organized pattern which includes only the year participants were born. Moreover, in the content validity, experts provided some suggestions about some items, such as changing compound items (that included more than one item) and choosing suitable words in the context of the study.

Similarly, reliability helps to know the extent to which the questionnaires give the same results when they are repeated. One of the steps that tested the internal consistency and reliability of the questionnaire was a pilot study. The pilot study played a significant role in identifying modifications needed to get an appropriate final form of the survey. "Pilot studies represent a fundamental phase of the research process" (Leon et al., 2011). The researcher conducted a pilot study of the questionnaire used in this research in order to measure the internal consistency and reliability of the questionnaire. In this task, the researcher sent the questionnaire as a pilot study to a number of faculty members affiliated with Saudi universities and currently completing their studies in the U.S in order to ensure the internal consistency and reliability of the questionnaire. According to Tavakol & Dennick (2011) "High quality tests are important to evaluate the reliability of data supplied in an examination or a research study"(p. 54). Thus, the researcher used Cronbach's alpha to measure the reliability and internal consistency of this questionnaire. Cronbach's alpha is a measure of internal consistency, which is, how closely related a set of

items is as a group. Because items in the second, fourth, and fifth parts of the questionnaire in this study measure different things; items in these three parts did not need to correlate with one another. In contrast, items in the third part of this questionnaire —faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process—measure only one construct. Hence, the researcher used Cronbach's alpha to measure reliability and internal consistency only with items in the third part of this questionnaire.

3.5.2 Constructing the Questionnaire

There were five sections in the survey, and each section consisted of a number of various items related to the research questions of this study. The researcher had taken into account guidelines for the design of the survey. Also, the survey was revised after getting feedback from the experts who were asked to evaluate it before applying it officially, and this in turn enhanced the validity of the survey. In the first part of the survey, there was general information about participants (demographic information) which included age, gender, number of years teaching in higher education, major, and academic rank. In the second part, the researcher focused on faculty members' experiences in using social media in teaching. There were seven items, and a five-level Likert-Scale was used: 5) always, 4) often, 3) sometimes, 2) rarely, and 1) never. In the third part, there were questions that focused on faculty members' attitudes towards using social media in flipped classrooms. This part had eight items and used a five-level Likert-Scale: 5) strongly agree, 4) agree, 3) neutral, 2) disagree, and 1) strongly disagree. The fourth part focused on the learning activities employed in the flipped classroom by faculty members using social media, and how these activities consider students' learning preferences in each of four categories of R2D2 models. This section included 16 items, so that each category of R2D2 models had four items. This section also used a five-level Likert-Scale: 5) always, 4) often, 3) sometimes, 2)

rarely, and 1) never. Finally, in the fifth part, there were statements that focused on factors which prevent or limit Saudi faculty's social media uses in flipped classrooms. This part had seven items and used a five-level Likert-Scale: 5) strongly agree, 4) agree, 3) neutral, 2) disagree, and 1) strongly disagree. Tables 2- 6 illustrate a detailed explanation for items of the survey.

Table 2: Items of the Survey Related to Demographic Information

	No. Of Items	Description
The first part	6	In this part, there was general information about participants (demographic information): age, gender, number of years teaching in higher education, major, and academic rank.

Age:
In which year you were born? (Specify: ____).

Gender

Sex: (Male, and Female)

Number of years teaching in higher education:

How many years of teaching experience have you had in higher education? (Specify: ____).

What is your major? Education, Science, Mathematics, Human Studies, Engineering, Medicine, other (specify: ____).

Academic rank:

Specify academic rank (professors, associate professors, assistant professors, instructors, and teaching assistants).

Would you like to volunteer to participate in a later online interview related to this study?

Yes ------- Please enter your phone number or email: …….

No

Table 3: Items of the Survey Related to the Faculty Members' Experiences in Using Social Media in Teaching

	No. Of Items	Description
The second part	7	This part focused on faculty members' experiences in using social media in teaching. There were 7 items which used a five-level Likert-Scale: 5) always, 4) often, 3) sometimes, 2) rarely, and 1) never.
▪ I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students. ▪ I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram). ▪ I direct my students to share experience with each other through social media. ▪ I use social media as a resource for exchanging knowledge with my students. ▪ I show my personal research interests through a public profile on social media. ▪ I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board). ▪ I use social media to reach conferences or other classrooms.		

Table 4: Items of the Survey Related to Faculty Members' Attitudes Towards Using Social Media as a Flipped Classroom tool in the Teaching Process

	No. Of Items	Description
The third part	8	In this part, questions focused on faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process. A five-level Likert-Scale was used: 5) strongly agree, 4) agree, 3) neutral, 2) disagree, and 1) strongly disagree
▪ I think that social media is useful in implementing a flipped classroom ▪ I think that students' uses of social media in higher education have a significant role in		

enhancing a flipped classroom.

- I think that using social media in a flipped classroom generates communication between faculty members and students.
- I think that using social media in a flipped classroom creates interactive learning environments.
- I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom.
- When I use social media in a flipped classroom, I address diverse learner preferences and desires.
- I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere.
- I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.).

Table 5: Items of the Survey Related to the Learning Activities in Each Category of R2D2 Model

	No. Of Items	Description
The fourth part	16	This part focused on learning activities employed in the flipped classroom by faculty members using social media and how these activities consider students' learning preferences in each of four categories of R2D2 model. This section included 16 items, so that each category of R2D2 model has four items. This section used five-level Likert-Scale: 5) always, 4) often, 3) sometimes, 2) rarely, and 1) never
When using social media, did you use these activities in implementing the flipped classroom in		

order to prepare students for the upcoming lecture?

Reading:

- Providing students with some online reading materials related to content of lecture
- Providing students with audio materials related to content of lecture
- Creating online chats including some questions and answers related to the content of the lecture among students (i.e. each other) and with the instructor
- Assigning students to find and read a certain number of articles related to the topic of the lecture

Reflecting:

- Asking the students to discuss with each other in online discussion forums including some content related to the topic of the lecture
- Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture
- Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture
- Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that

Displaying:

- Creating instructional video that includes the content related to the lecture and posting it on YouTube
- Asking students to watch online conferences or events related to the topic of the lecture
- Creating virtual field trips corresponding to the content of the lecture and asking students

to view them ▪ Providing students with figures or charts related to the content of the lecture **Doing:** ▪ Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners ▪ Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture ▪ Providing students with online simulation games used to explain concepts and principles related to the content of the lecture. ▪ Using online sites and asking students to add summaries or comments related to the content of the lecture

Table 6: Items of the Survey Related to Factors which Prevent or Limit Saudi Faculty's Social Media Uses in Flipped Classrooms

	No. Of Items	Description
The fifth part	7	In this part, the statements focused on the *factors* which *prevent or limit* faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching practices. A five-level Likert-Scale was used: 5) strongly agree, 4) agree, 3) neutral, 2) disagree, and 1) strongly disagree.
▪ Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching. ▪ The required time for preparing a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.		

- Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.
- Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching.
- Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to a flipped classroom by using of social media.
- Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching.
- The high cost of technological tools used in a flipped classroom prevents or limits me from adopting social media as a flipped classroom tool.

3.5.3 Interview Protocol

In order to reach a deeper understanding of the research questions, the interview was developed with eight questions. These questions were intended to give an in-depth picture about faculty members' experiences using social media in teaching in Saudi universities, faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process, and the factors that prevent or limit Saudi faculty's social media uses in flipped classrooms. Table 7 illustrates a detailed explanation for the interview questions.

Table 7: Research Area and the Interview Questions

Research Area	Interview Questions
1. Experiences in using social media	1. How do you use social media in your teaching practices with students? Provide examples. 2. Which types of social media did you use in your teaching? Provide example. Why did you use them?
2. Faculty members' attitudes towards using	3. How do you see the role of using social media as a flipped classroom tool in the teaching process? Why?

social media in flipped classrooms	4. In what ways does the use of social media as a flipped classroom play a significant role in enhancing the educational process?
3. The factors that prevent or limit Saudi faculty's social media uses in flipped classrooms	5. What, if any, factors prevent or limit your use of social media as a flipped classroom in teaching practices? Why? 6. What do you think the factors are that prevent or limit other faculty members from using social media as a flipped classroom in Saudi universities? 7. How do you see the effect of universities, faculty members or students on the use of social media as a flipped classroom in Saudi universities? Why? 8. What are some of the motivators that encourage faculty member like yourself (in Saudi universities) to use social media as a flipped classroom in teaching practices? Why?

3.6 Data Collection Procedures

One of the data collection instruments used in this study was for survey data obtained through the questionnaire. After making sure of the questionnaire's validity and reliability and after obtaining IRB approval for using the questionnaire in this study, the questionnaire was designed and published online through the Qualtrics survey website provided by Wayne State University. Due to spatial dimensions between the researcher and participants and in order to obtain a sample including faculty members in all Saudi universities, social networking sites were used to share the questionnaire with participants.

As mentioned above, participants in this study included faculty members who are working during the period of this study in one of the Saudi universities, as well as Saudi faculty members who are currently completing their studies overseas and who are affiliated with Saudi universities as instructors or teaching assistants. The questionnaire was sent to Saudi faculty members who are currently completing their studies in the U.S. through the Saudi Arabian

Cultural Mission's (SACM) platform on social media. Also, the questionnaire was published through the official accounts of Deanships of Graduate Studies in Saudi universities on SNSs through personal communication with graduate studies deans in Saudi universities asking them to facilitate posting the survey link on their Deanships of Graduate Studies SNSs.

In addition, the researcher asked responsible staff in deanships of Graduate Studies in Saudi universities and SACM to provide him with faculty members' email addresses. After that, the researcher sent messages to faculty members via his official email at WSU. The message contained the link to the questionnaire and an invitation to participate in the study. This, in turn, helped the researcher to reach faculty members who were not familiar with SNSs, such as Facebook or Twitter.

The researcher also used direct personal communication with some faculty members in Saudi universities and asked them to participate in this study and share it with other faculty members via the WhatsApp platform, email, or any other social media tool. Figure 5 depicts the planned recruiting process for data collection.

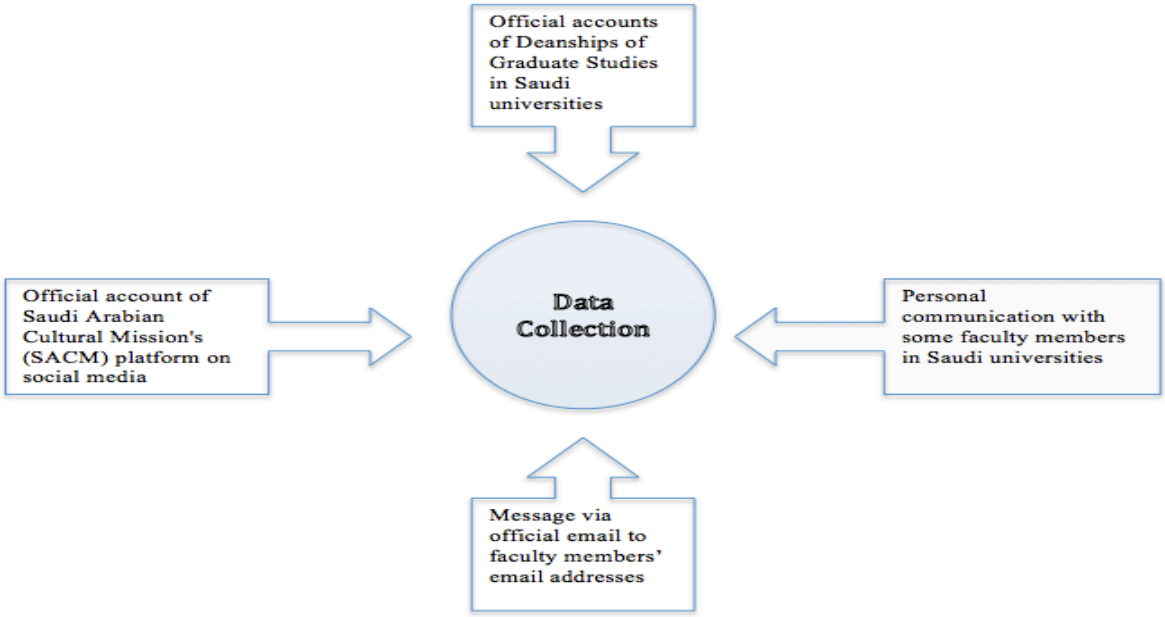


Figure 5: Planned Recruiting Process for Data Collection

Furthermore, there were interviews with eight faculty members affiliated with Saudi universities. Volunteers were selected to participate in the interviews with representatives from both genders and from all different academic ranks. For example, the researcher tried to recruit two professors, two assistant professors, two instructors, and two teaching assistants. Also, the researcher tried to recruit interviewees who have different years of teaching experience in higher education. Because Arabic is the primary language in Saudi Arabia, the researcher used it during the interview. This also helped interviewees give more details during their responses.

The researcher used personal communication with some faculty members in Saudi universities to recruit interviewees. Also, the researcher asked questionnaire respondents to indicate within the instrument if they would like to volunteer to participate in an interview. These interviews were carried out by phone. Also, they were recorded after securing approval from participants.

3.7 Data Analysis Techniques

In this study, the last version of Statistical Package for the Social Sciences (SPSS) was used to show descriptive analysis of the questionnaire. In the descriptive analysis, the demographic variables and the different groups in this study were presented. This study discussed faculty members' experiences in Saudi universities using social media in teaching, as well as addressing students' learning preferences per the R2D2 framework. Also, in this study there were two groups: male and female faculty members. Therefore, measures of central tendency (mean, median, mode, and standard deviation) were used to interpret the findings of the descriptive analysis. Also, the T-test was used to test significance and differences between two independent groups; One Way ANOVA was used to test significance and differences between more than two independent groups. In this study, the differences between two groups of male

and female faculty members in terms of: their experiences in using social media in teaching, their attitudes towards using social media in flipped classrooms, and the factors that may prevent or limit each gender form using social media as a flipped classroom tool in Saudi universities. The T-test was used to test significance and differences in this case.

One Way ANOVA was used to see if attitudes of less experienced faculty members towards using social media as a flipped classroom in the teaching process were different than those of more experienced faculty members in Saudi universities.

One Way ANOVA also was used to test significance and differences between categories of academic rank (professors, associate professors, assistant professors, instructors, and teaching assistants) and to what extent the faculty members in Saudi universities have experiences in using social media in teaching. This in turns added value to the study by knowing which academic rank uses social media more in Saudi universities for educational purposes. Moreover, one Way repeated measures ANOVA was used to test significance and differences between category of R2D2 model. Table 8 illustrates collection methods and analysis methods related to each question in sets of questions of this research.

Table 8: Summary of Research Questions, Data Collection Method, and Analysis Method

Research Questions	**Data collection Method**	**Data Analysis Method**
1. What are faculty members' experiences in using social media in teaching in Saudi universities?	Survey Interviews	- Descriptive statistics - One Way ANOVA to test significant differences between categories of academic rank on experience in using social media in teaching. - T-test to test significant differences between two independent groups—male-female.
2. What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female	Survey Interviews	- Descriptive statistics - One Way ANOVA to test significant differences between less experienced and more experienced faculty members in Saudi universities towards using social

faculty members in Saudi universities in this regard? If so, what are such differences?		media as a flipped classroom in the teaching process. - T-test to test significant differences between two independent groups—male-female.
3. How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?	Survey	- Descriptive statistics - One Way repeated measures ANOVA will be used to test significant differences between categories of the R2D2 model on amount of use.
4. What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?	Survey Interviews	- Descriptive statistics - T-test to test significant differences between two independent groups—male-female.

3.8 Chapter 3 Summary

In this chapter, the mixed-method research was adopted in this study because of employing a survey and interviews as data collection methods. The researcher discussed population and the size of sample that included 384faculty member from Saudi universities. Also, in this chapter, constructing the questionnaire and establishing interview protocol were designed through building five sections in the survey by the use of a five-level Likert-Scale, as well as developing eight questions in interview protocol. In addition, descriptive statistics, the T-test, One Way ANOVA, and one Way repeated measures ANOVA were employed as data analysis techniques in this study to implement descriptive statistics for variables of study, test significance and differences between two independent groups, and test significance and differences between more than two independent groups, respectively.

CHAPTER 4: RESULTS

4.1 Introduction

This chapter discusses the reliability of instruments and presents a detailed summary of descriptive statistics about the demographic information for questionnaire respondents and interviewees. It also presents statistical results of the questionnaire and interviews related to the study questions and discusses the significant differences between groups in this study depending on research design. What should be mentioned here is all statistical descriptions and tests used had 95% confidence level and 0.05 margin of error.

4.2 Reliability of Instrument

Reliability has played a significant role in determining the extent to which the test gives the same results when it was repeated several times. More simply, "the results could be replicated if the same individuals were tested again under circumstances. This desired consistency (or reproducibility) of test scores is called reliability" (Crocker & Algina, 2008, p. 105). Cronbach's alpha is "the most widely used objective measure of reliability" (Tavakol & Dennick, 2011, p. 53). The researcher in this study conducted a pilot study with n=13 participants from faculty members affiliated with Saudi universities and used Cronbach's alpha to measure internal consistency of the questionnaire. Cronbach's alpha is a statistical value between 0 and +1.00. The relationship between items of the questionnaire is strong (i.e. high reliability) when the reliability coefficient of Cronbach's alpha is near +1.00; the relationship is poor (i.e. low reliability) when this score close to 0.

Although the second, fourth, and fifth parts of the questionnaire (faculty members' experiences in using social media in teaching, learning activities in each category of the R2D2 Model, and factors which prevent or limit Saudi faculty's social media uses in flipped

classrooms, respectively) in this study measure different things, and items in these three parts do not need to correlate with one another, the researcher preferred to measure internal consistency for all parts of the questionnaire separately. As illustrated in Table 9, Cronbach' s alpha (α) for faculty members' experiences in using social media in teaching was 0.81, and 0.98 for faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process, 0.86 for learning activities in each category of the R2D2 Model, and 0.89 for factors which prevent or limit Saudi faculty's social media uses in flipped classrooms. The greatest value of Cronbach' s alpha coefficient ($\alpha = 0.98$) was for faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process that measure only one construct.

Table 9: Reliability of Instrument

Variables	N of Items	Cronbach's Alpha (α)
Faculty Members' Experiences in Using Social Media in Teaching	7	0.81
Faculty Members' Attitudes Towards Using Social Media as a Flipped Classroom tool in the Teaching Process	8	0.98
Learning Activities in Each Category of R2D2 Model	16	0.86
Factors which Prevent or Limit Saudi Faculty's Social Media Uses in Flipped Classrooms	7	0.89

4.3 Sample Characteristics

The population of the study included all faculty members in 28 Saudi universities (population size (N)= 64,689 faculty members, according to the Ministry Deputyship for Planning and Information, 2016). The total number of faculty members who participated in this study through the survey was 480 participants. 89 participants of this number preferred not to complete the survey, so they were excluded from the data analysis. 391 participants completed

almost all questions, except 20 participants who did not identify years of their birth. The following tables and charts present the details of participants in this study. They included year of birth, sex, years of teaching experience in higher education, major, and academic rank. Also, faculty members' experiences in using social media in teaching, faculty members' attitudes towards using social media as a flipped classroom tool in the teaching process, the learning activities in each category of R2D2 Model, and factors which prevent or limit Saudi faculty's social media uses in flipped classrooms were included.

4.4 Detailing of the Demographics for Questionnaire Respondents

4.4.1 Year of Birth and Gender

Table 10 with Figures 6 and 7 and Table 11 with Figure 8 show year of birth and gender of participants in this study, respectively. 8.6 % (n=32) were born in 1990 or later (ages 24-27 years); the largest percentage 50% (n= 186) were born between 1980-1989 (ages 28-37); 28.3 % (n=105) were born between 1970-1979 (ages 38-47); 10.5 % (n=39) were born between 1960-1969 (ages 48-57); and the lowest percentage 2.4 % (n= 9) were born in 1959 or earlier (ages 59-64). It should be noted here that the majority of participants were between 28 to 38 years of age; this was not surprising because "the younger generations, especially the millennials, computers are not technology, they are simply part of one's life" (Zhang & Bonk, 2010, p. 82). Also, it should be mentioned here that 5% (n=20 out of 391) of participants preferred to not mention their year of birth; this number consisted of both genders 70% female (n= 14) and 30% male (n=6). In addition, as illustrated in Table 11, 50.9 % (n=199) of participants were male faculty members while 49.1 % (n=192) were female faculty members.

Table 10: Frequency Distributions: Year of Birth and Age of Participants

Year	Age	No. of Participants	Year	Age	No. of Participants	Year	Age	No. of Participants
1953	64	2	1968	49	8	1981	36	14
1954	63	1	1969	48	6	1982	35	16
1956	61	1	1970	47	9	1983	34	17
1958	59	3	1971	46	13	1984	33	21
1959	58	2	1972	45	13	1985	32	25
1960	57	1	1973	44	11	1986	31	23
1961	56	6	1974	43	9	1987	30	15
1962	55	1	1975	42	9	1988	29	17
1963	54	3	1976	41	5	1989	28	12
1964	53	2	1977	40	13	1990	27	9
1965	52	6	1978	39	7	1991	26	14
1966	51	2	1979	38	16	1992	25	5
1967	50	4	1980	37	26	1993	24	4
Total		371 participants						
Missing		20 participants						

** Missing data was of both genders (male= 6 participants and female=14 participants).*

Notice: Age was calculated in years from date of collection data (2017)

Figure 6. Participants' Year of Birth

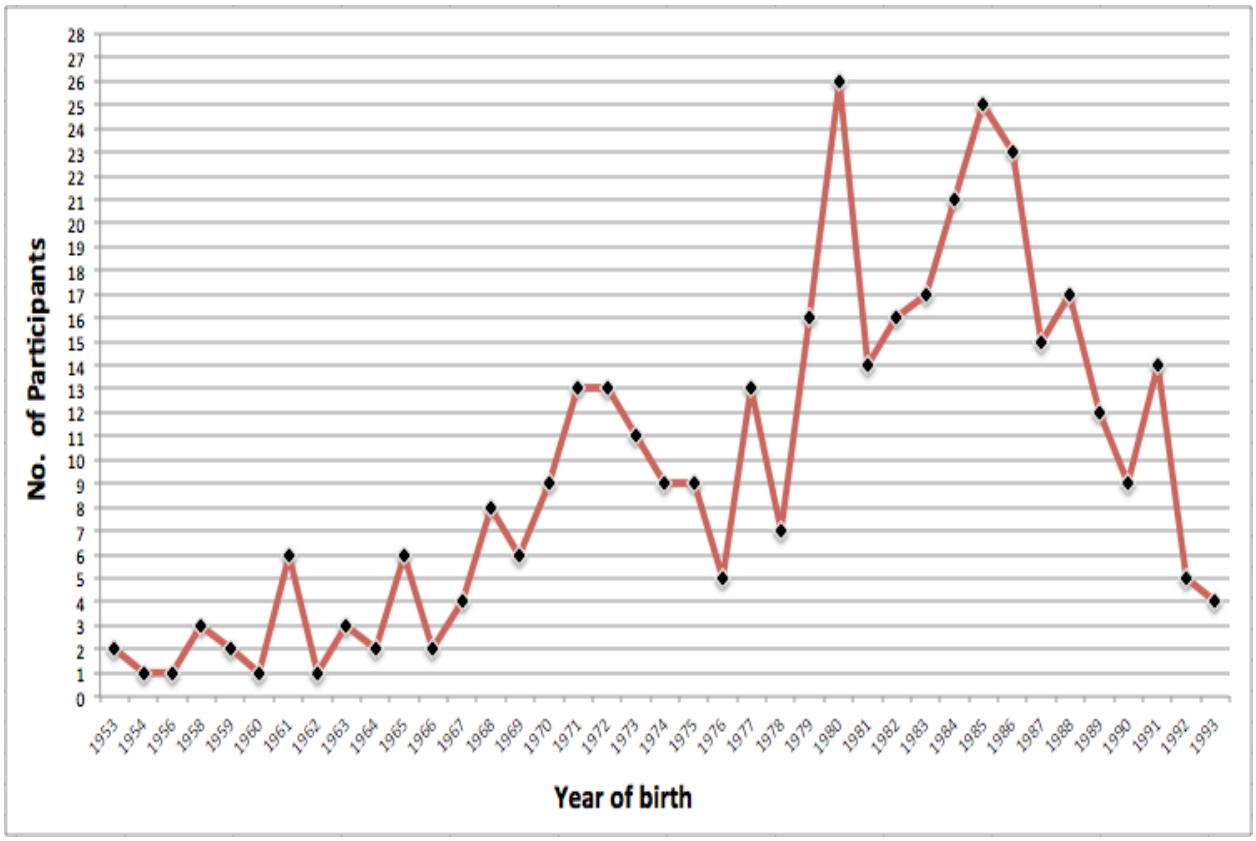


Figure 7. Participants' Age

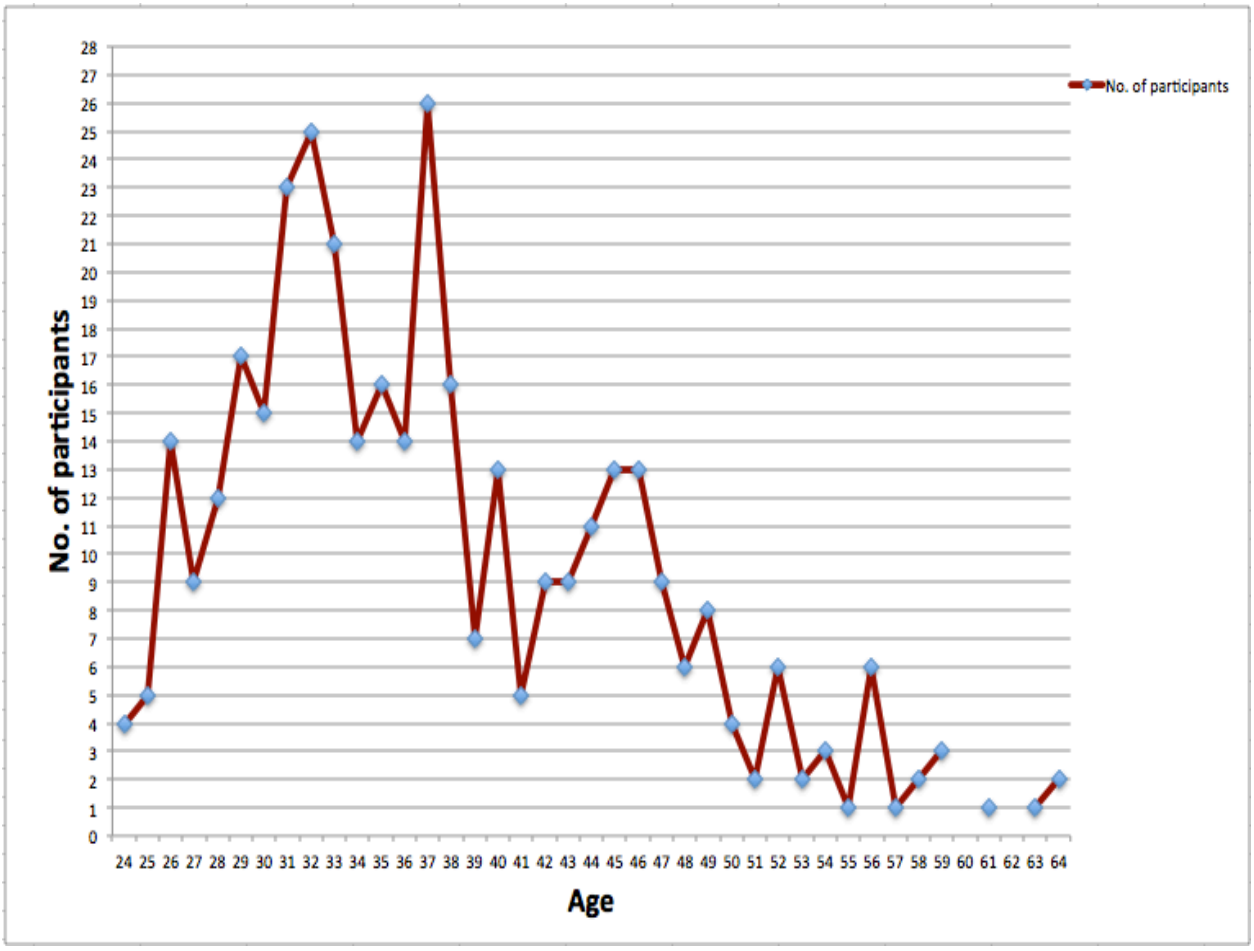
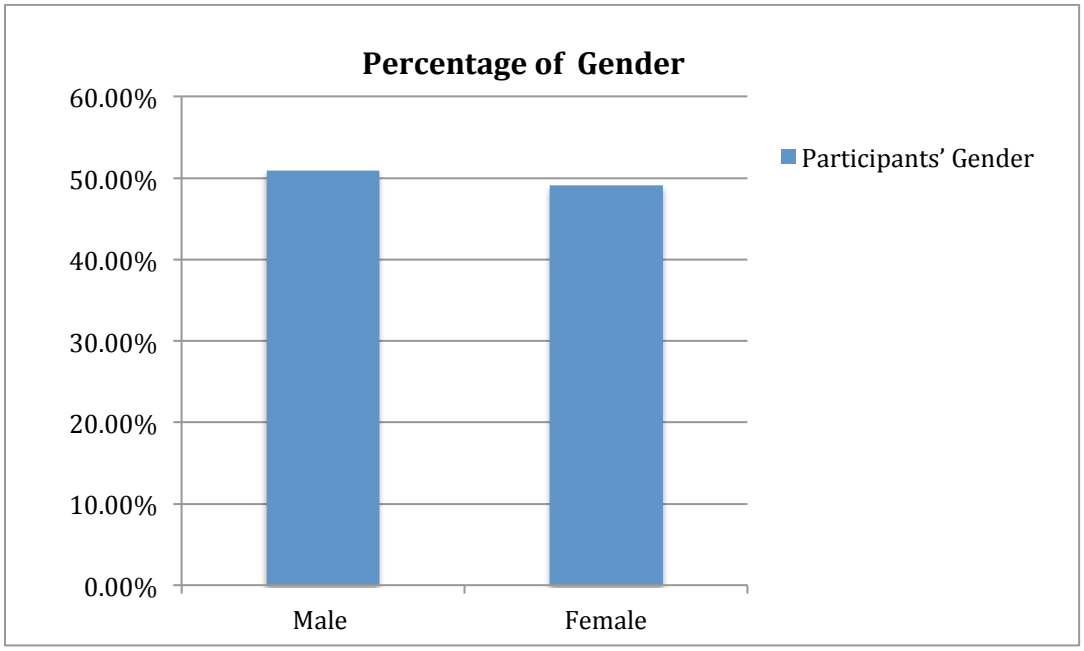


Table 11: Frequency Distributions: Gender of Participants

Gender of Participants	No. of Participants	Percent
Male	199	50.9 %
Female	192	49.1 %
Total	391	100 %

Figure 8. Percentage of Participants' Gender



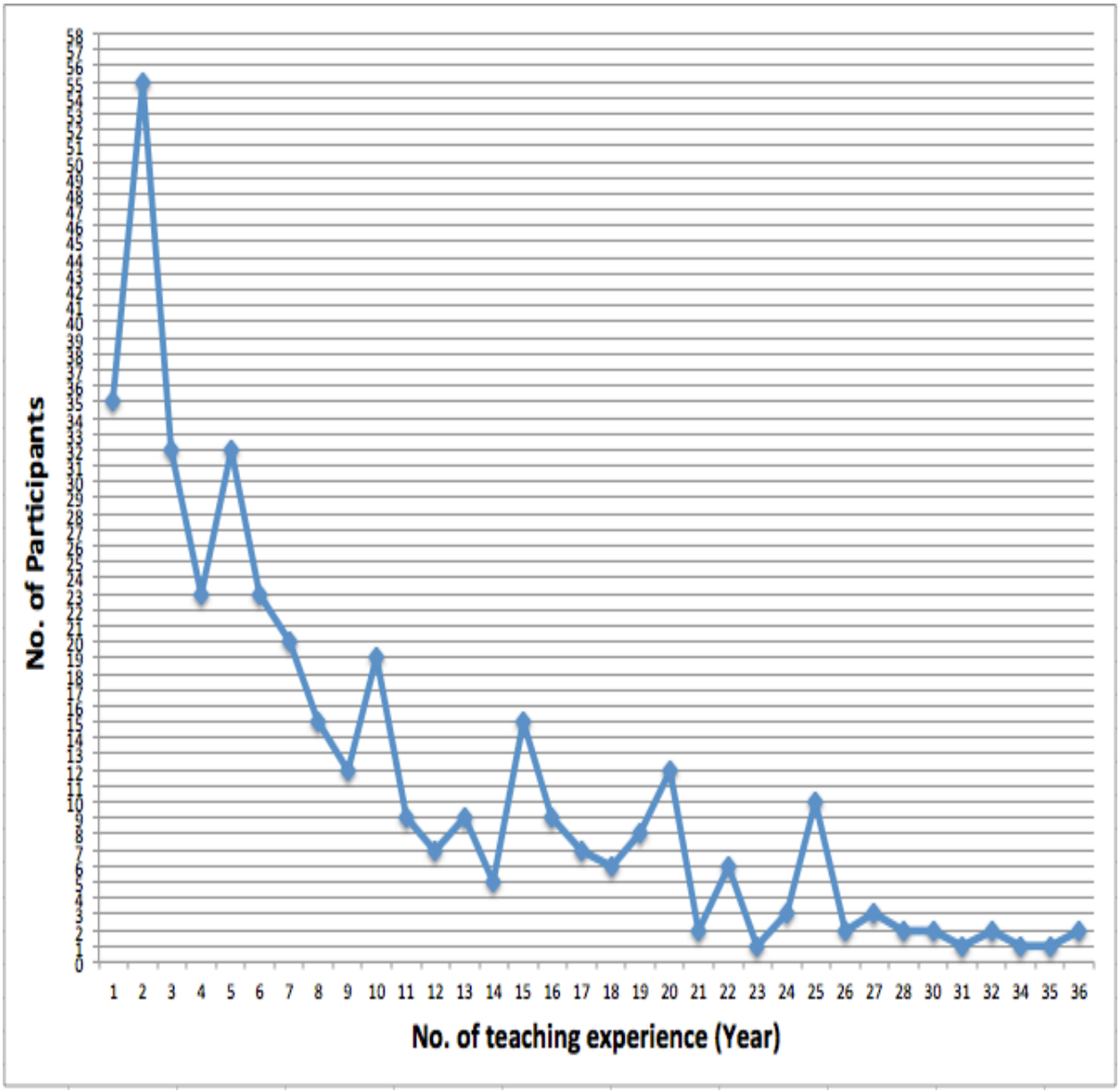
4.4.2 Participants' Years of Teaching Experience in Higher Education

Participants were asked to identify years of teaching experience in higher education. The details are shown in Table 12 and Figure 9.

Table 12: Years of Teaching Experience in Higher Education

No. of teaching experience (Year)	No. of Participants	No. of teaching experience (Year)	No. of Participants	No. of teaching experience (Year)	No. of Participants
1	35	13	9	25	10
2	55	14`	5	26	2
3	32	15	15	27	3
4	23	16	9	28	2
5	32	17	7	30	2
6	23	18	6	31	1
7	20	19	8	32	2
8	15	20	12	34	1
9	12	21	2	35	1
10	19	22	6	36	2
11	9	23	1		
12	7	24	3		
Total	391 participants				

Figure 9. Years of Teaching Experience in Higher Education



As presented in Table 12 and illustrated in Figure 9, the largest proportion 68% (n= 266) of participants had 1 to 10 years of experience in higher education; 22.2% (n=87) indicated between 11 and 20 years; 8% (n= 31) had between 21 and 30 years; and the smallest group 1.8% (n= 7) indicated more than 30 years. It should be noted here that the greatest number of years of teaching experience of the participants in this study was 36 years (n=2), while the least teaching experience was one year (n=35).

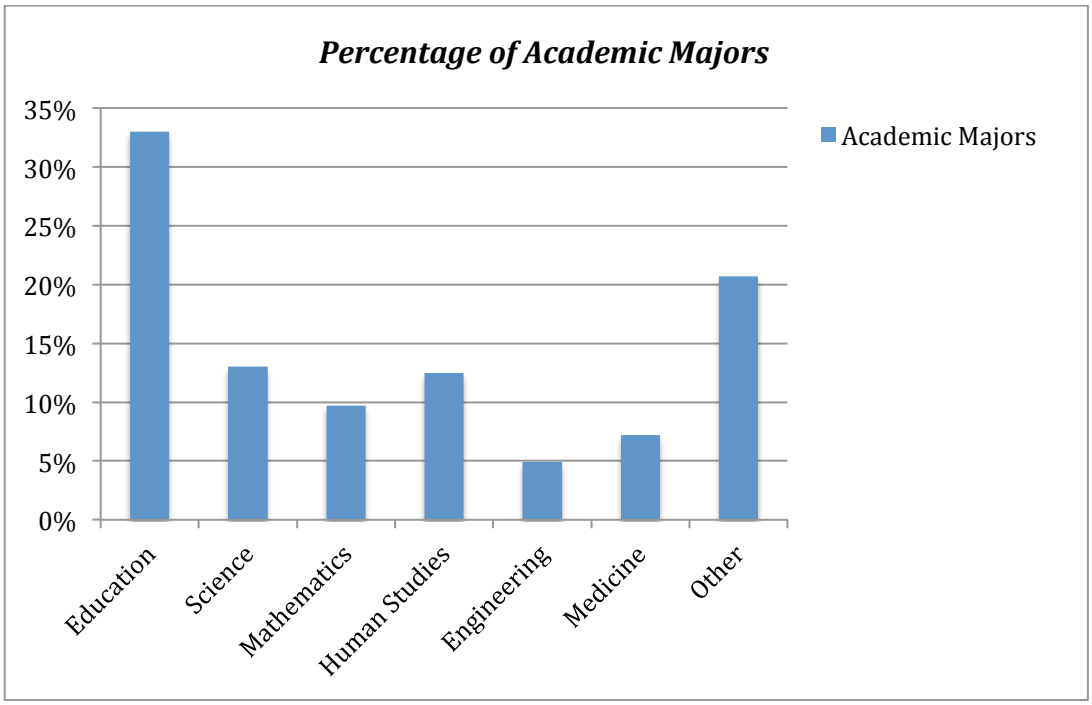
4.4.3 Participants' Academic Majors

The survey included some main majors (Education, Science, Mathematics, Human Studies, Engineering, Medicine). Also, in this section, there was the "Other" option for participants to add their majors in case they were not in the listed options. Participants were asked to disclose their academic majors. The details are shown in Table 13 and Figure 10.

Table 13: Participants' Academic Majors

Academic Major	No. of Participants	Percent
Education	125	33%
Science	51	13%
Mathematics	38	9.7%
Human Studies	49	12.5%
Engineering	19	4.9%
Medicine	28	7.2%
Other	81	20.7%
Total	391	100%

Figure 10. Percentage of Participants' Academic Majors



As presented in Table 13 and illustrated in Figure 10, 33% of participants in this study specialized in education. This is likely due to the large number of educational departments affiliated with fields in collages of education, such as Educational Psychology, Special Education, Elementary Education, Curriculum and Instruction, etc. 13% of participants indicated that their majors were Science; 9.7% were in Mathematics; 12.5% were in Human Studies; 4.9% were in Engineering; and 7.2% were in Medicine. In addition, 20.7% of participants selected the "Other" option and indicated that their majors related to Business, English Literature, Management, Islamic studies, Art, Geography Information Systems (GIS), Computer Science, Communication and Culture, Linguistics, or Arabic.

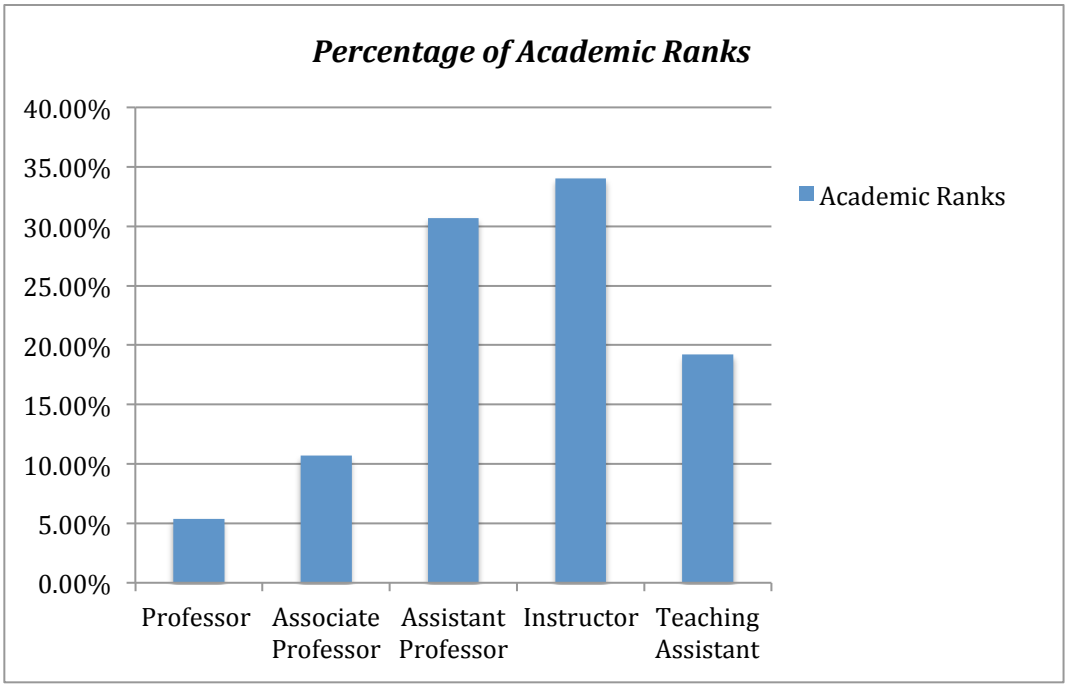
4.4.4 Participants' Academic Ranks

Participants were asked to identify their academic ranks. The details are shown in Table 14 and Figure 11.

Table 14: Participants' Academic Ranks

Academic Rank	No. of Participants	Percent
Professor	21	5.4%
Associate Professor	42	10.7%
Assistant Professor	120	30.7%
Instructor	133	34%
Teaching assistant	75	19.2%
Total	391	100%

Figure 11. Percentage of Participants' Academic Ranks



As presented in Table 14 and illustrated in Figure 11, 5.4% (n=21) of participants mentioned that their academic rank was full professor, and this represents the lowest number of participants in the study. 10.7% (n=42) of participants reported that they were associate professors. 30.7% (n=120) were assistant professors, and 34% (n=133) were instructors. The two academic ranks—assistant professor and instructor—were the majority of participants in this study. Finally, 19.2% (n=75) reported that their academic rank was teaching assistant.

4.4.5 Acceptance of Participants to Participate in Online Interview Related to This Study

The researcher asked questionnaire respondents to indicate within the instrument if they would like to volunteer to participate in an interview. 20% (n=79) accepted to participate in the interview. Although a large number of those who accepted to participate in the interview did not provide the researcher with their contact information and another number did not respond later, this method helped the researcher in recruiting some interviewees in addition to reaching different categories of faculty members.

4.4.6 Detailing of the Demographics for Interviewees

The researcher tried to recruit both male and female interviewees who had different academic ranks and different years of teaching experience in higher education. Table 15 presents interviewees' characteristics.

Table 15: Interviewees' Characteristics

	Year of Birth	Gender	Teaching experience	Major	Academic rank
Interviewee # 1	1958	Male	30	Human Studies	Assistant professor
Interviewee # 2	1974	Male	19	Human Studies	Associate professor
Interviewee # 3	1972	Male	7	Education	Associate professor
Interviewee # 4	1982	Male	6	Evaluation and research	Instructor
Interviewee # 5	1982	Female	12	Educational Technology	Assistant professor
Interviewee # 6	1960	Female	9	Management	Assistant professor
Interviewee # 7	1981	Female	5	Science	Instructor
Interviewee # 8	1989	Female	2	Arabic Language	Teaching Assistant

As presented in Table 15, there were 8 faculty members who participated in online interviews related to this study. Four interviewees were male, and their teaching experiences, majors, and academic rank were (30, Human Studies, Assistant professor; 19, Human Studies, Associate professor; 7, Education, Associate professor; and 6, Evaluation and research, Instructor). Another four of interviewees were female, and their teaching experiences, majors,

and academic rank were (12, Educational Technology, Assistant professor; 9, Management, Assistant professor; 5, Science, Instructor; and 2, Arabic Language, Teaching Assistant). What should be noted here is that academic rank was fairly similar to the results of participants in the survey. Full professors were the lowest group, and in the interview, they did not respond to participate in the online interview. Also, assistant professors and instructors were more responsive to participation in the survey and interview.

4.5 Data Analysis Results by Research Question

In this part of the chapter, the researcher discusses and presents the results of quantitative and qualitative data analyses related to research questions in this study.

4.5.1 Results of Research Question 1: What are faculty members' experiences in using social media in teaching in Saudi universities?

Participants were asked about their experiences in using social media in teaching. In this section, there were seven items. The data were collected and coded by using a five-level Likert-Scale as follows: Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1). Table 16 and Figure 12 present faculty members' experiences in using social media in teaching.

Table 16: Percentages for Faculty Members' Experiences in Using Social Media in Teaching

	Items	*Percentages and Numbers of Participants' Responses*				
		Always	Often	Sometimes	Rarely	Never
1.	I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students.	17.9% n= 70	21.7% n= 85	19.5% n= 76	17.1% n= 67	23.8% n= 93
2.	I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram).	6.1% n= 24	17.7% n= 69	14.8% n= 58	11.8% n= 46	49.6% n=194
3.	I direct my students to share experience with each other through social media.	17.7% n= 69	22% n= 86	24.8% n= 97	14.8% n= 58	20.7% n= 81
4.	I use social media as a resource for exchanging knowledge with my students.	15.1% n= 59	23.5% n= 92	27.4% n= 107	15.6% n= 61	18.4% n= 72

5.	I show my personal research interests through a public profile on social media.	17.9% n= 70	27.9% n= 109	27.1% n=106	10.5% n= 41	16.6% n= 65
6.	I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board).	10.5% n= 41	17.4% n= 68	28.9% n= 113	16.9% n= 66	26.3% n= 103
7.	I use social media to reach conferences or other classrooms.	14.83% n= 58	22.51% n= 88	20.72% n= 81	16.62% n= 65	25.32% n= 99

Figure 12. Percentage for Faculty Members' Experiences in Using Social Media in Teaching

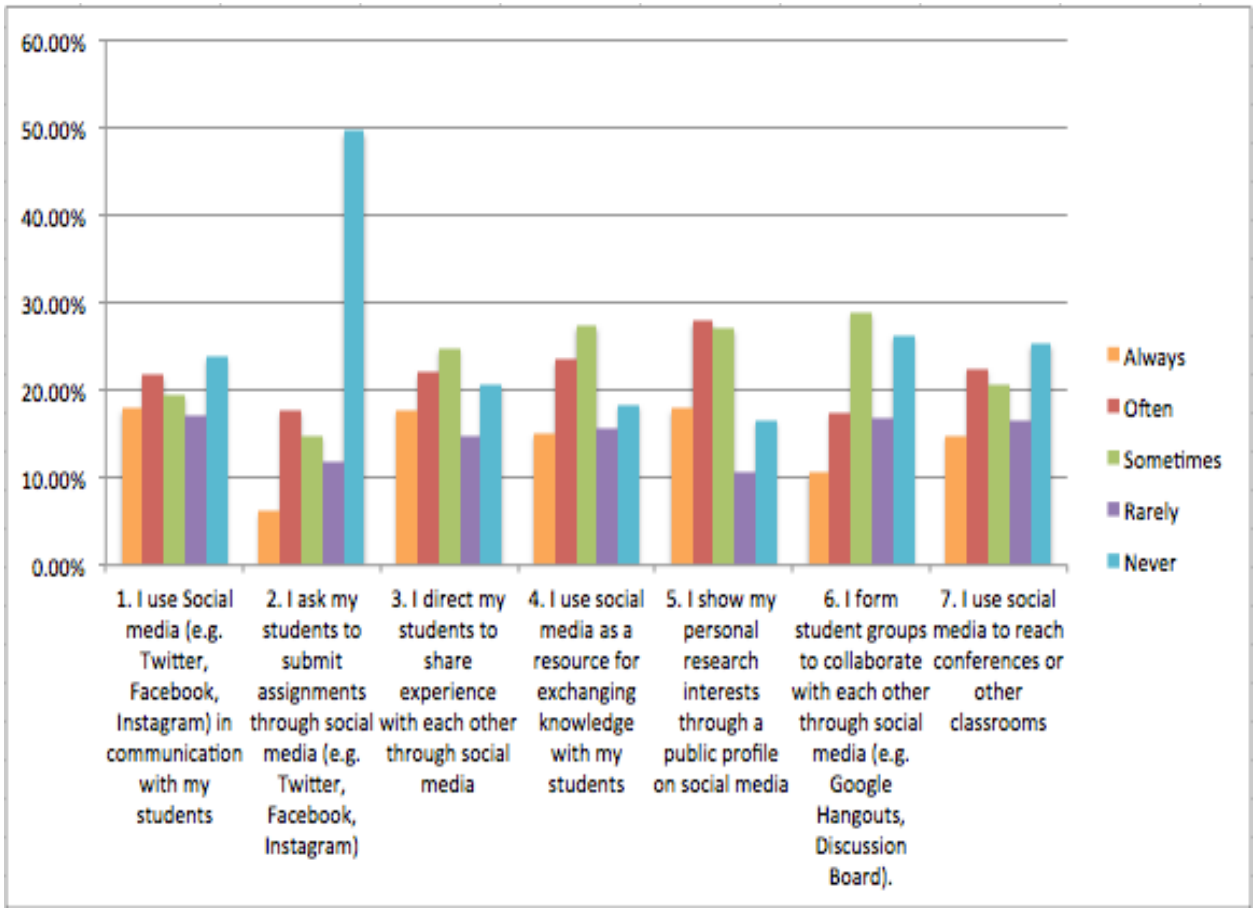


Table 17 presents the descriptive statistics for faculty members' experiences in using social media in teaching in Saudi universities for Mean, Median, Mode and Standard Deviation (SD) for all items related to faculty members' experiences in using social media in teaching.

Table 17: Descriptive Statistics for Faculty Members' Experiences in Using Social Media in Teaching

		The descriptive statistics			
		Mean	Median	Mode	SD
1.	I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students.	2.93	3	1	1.43
2.	I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram).	2.19	2	1	1.36
3.	I direct my students to share experience with each other through social media.	3.01	3	3	1.38
4.	I use social media as a resource for exchanging knowledge with my students.	3.01	3	3	1.31
5.	I show my personal research interests through a public profile on social media.	3.20	3	4	1.31
6.	I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board).	2.69	3	3	1.31
7.	I use social media to reach conferences or other classrooms.	2.85	3	1	1.40
	Average	2.84	2.86	2.28	1.36

Tables 16 and 17 and Figure 12 summarize participants' self reported uses of social media in communication with students, as follows: 17.9% (n= 70) of participants selected "Always", 21.7% (n= 85) selected "Often", 19.5% (n= 76) selected "Sometimes", 17.1% (n= 67) selected "Rarely", and 23.8% (n= 93) selected "Never".

The second item was *"I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram)"*. About half of the participants reported ″Never″ (49.6%, n= 194) and 11.8% of them (n=46) reported "Rarely". Only a small number of participants indicated "Always" (6.1%, n= 24), or "Often" (17.7%, n= 69), and 14.8% (n= 58) indicated "Sometimes".

The third item was *"I direct my students to share experience with each other through social media"*. 20.7% of participants (n= 81) reported "Never" and 14.8% of them (n= 58)

reported "Rarely". In contrast, 17.7% of participants (n= 69) indicated "Always", and 22% of them (n= 86) indicated "Often". 24.8% of participants (n= 97) reported "Sometimes".

The fourth item was *"I use social media as a resource for exchanging knowledge with my students"*. 18.4% of participants (n= 72) reported "Never" and 15.6% of them (n= 61) reported "Rarely". In contrast, 15.1% of participants (n= 59) indicated "Always", and 23.5% of them (n= 92) indicated "Often". The largest number of participants indicated "Sometimes" (27.4%, n= 107).

The fifth item *was "I show my personal research interests through a public profile on social media"*. 17.9% of participants (n= 70) reported "Always", 27.9% of them (n= 109) selected "Often". Only a small number of participants indicated "Never"(16.6 %, n= 65), or "Rarely" (10.5%, n= 41), and 27.1% (n= 106) indicated "Sometimes".

The sixth item was *"I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board)"*. A large number of participants indicated "Never" (26.3 %, n= 103) and 16.9% of participants (n= 66) reported "Rarely". Only a small number of participants indicated "Always" (10.5%, n=41), or "Often" (17.4%, n= 68), and 28.9% of them (n= 113) indicated "Sometimes".

The seventh item was "I use social media to reach conferences or other classrooms". A large number of participants indicated "Never" (25.32 %, n= 99) and 16.62% of them (n=65) indicated "Rarely". Only a small number of participants indicated "Always" (14.83%, n= 58), and 22.51% of them (n= 88) indicated "Often" and 20.72% of them (n= 81) indicated "Sometimes".

The descriptive statistics show that six items were equal for faculty members' experiences in using social media in teaching with a median of 3, and one item, "I ask my

students to submit assignments through social media (e.g. Twitter, Facebook, Instagram)" had a median of 2.

“Always” was not the highest rating for any items of faculty members’ experiences in using social media in teaching in Saudi universities; rather, it had the lowest ratings on: 1) asking their students to submit assignments through social media (e.g. Twitter, Facebook, Instagram) (6.1%), 2) using social media as a resource for exchanging knowledge with their students (15.1%), 3) forming student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board) (10.5%), and 4) using social media to reach conferences or other classrooms (14.83%). On the other hand, “never” received the highest rating with three faculty members’ experiences in using social media in teaching: 1) use social media (e.g. Twitter, Facebook, Instagram) in communication with my students (23.8%), 2) asking my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram) (49.6%), and 3) using social media to reach conferences or other classrooms (25.32%).

Generally, the overall median for all items of faculty members’ experiences in using social media in teaching in Saudi universities was (2.86), which is close to "Sometimes". This means that social media were occasionally employed by faculty members in teaching in Saudi universities, and the majority of these faculty members have some experience in using social media in teaching.

Interviewees had different views about the use of social media in their teaching practices with students. Interviewee #1 asserted that he did not use any social media in teaching. He mentioned that he had a Twitter account but did not use it for instructional purposes. Interviewee # 2 mentioned that he had used social media, such as Twitter and WhatsApp but only to inform students about changes that in the course plan and remind them the time of the lecture.

Interviewee #3 reported that he used social media, such as Twitter, WhatsApp, Facebook for creating groups and including some course content and giving students a chance to discuss this content. He mentioned that the content had been set on social media after the main lecture. Interviewee #4 asserted that he had used WhatsApp in order to send some alerts regarding the time of the lectures or any changes that should be known before the lecture. Also, he mentioned that he had used Blackboard for conducting discussions and some quizzes. This may be similar to Interviewee # 2' use of some social media to communicate with students.

Interviewee #5 reported that she had used social media in her teaching practice via Telegram to provide content to students with a number of images and links so that they could discuss it with each other. Also, she had used Twitter and WhatsApp to receive some questions from students. What should be mentioned here is that interviewee #5 mentioned that " *the customs and traditions in Saudi society have prevented me from applying more social media because many students do not want to participate in a group that may be general.* She also mentioned that *these habits may have been few in recent years, but they still exist and we are working hard to overcome them*". Interviewee #6 reported that she had used WhatsApp and Blackboard. She used WhatsApp to create groups for the course and provide students with important information related to the course. Also, she had used BlackBoard for submitting some assignments and discussions related to the course.

Interviewee #7 reported that she had used WhatsApp with all her students now and students who she had taught in past years to create groups and provide students with everything new in their field. Interviewee # 8 asserted the importance of the role of social media by using Twitter as an important instructional tool to communicate with students, discuss topics related to the course, and share educational resources.

Table 18: Type of Social Media Used by Interviewees

	Type of social media	Why you choose the particular social media
Interviewee # 1	Twitter	"It is the most widely used and easy to deal with it."
Interviewee # 2	Twitter, Snapchat, WhatsApp	"They are easy to use and more reliable than others, and the content could be edited or modified on them."
Interviewee # 3	Twitter, WhatsApp, Email, and Facebook	"They are most applications to be receptive by students. They can be activated and used easily by Smartphone."
Interviewee # 4	WhatsApp and Blackboard	"Because students have the ability to use them easily. Blackboard is also the official educational platform that is accessible through the university website."
Interviewee # 5	Telegram, Twitter, and WhatsApp	"Because the student experience in them is more. Also, when applications are most private, they are more acceptable among female students in Saudi society."
Interviewee # 6	WhatsApp, and Blackboard	"WhatsApp is easy and present with students in anywhere and any time. They can receive responses on time. Blackboard is a good place for discussion and submitting assignments."
Interviewee # 7	WhatsApp	"It is easy to be used by students and me, and is widely common among most students."
Interviewee # 8	Twitter	"It is the easiest and most popular in society."

Overall, the interviews indicated that there were a number of social media used by faculty members in Saudi universities in teaching practices as shown in Table 18. The majority of these applications were used for exchanging knowledge, responding to students' questions, and creating groups for discussions.

Kruskal-Wallis H Test was used instead of One Way ANOVA that had been planned in data analysis techniques of this study because assumptions of normality and homogeneity were

not met in the data of this question. It was used to test the significant differences between five independent groups by participants professional ranking (i.e., professor, associate professors, assistant professors, instructors, and teaching assistant) in the quantitative data (the survey) regarding faculty members' experiences in using social media in teaching in Saudi universities. Table 19 presents the results of Kruskal-Wallis H Test in determining the significant differences between academic ranks and faculty members' experiences in using social media in teaching.

Table 19a: Kruskal-Wallis H Test to Determine the Significant Differences between Academic Ranks and Faculty Members' Experiences.

Items	Chi-Square	Sig.	Academic rank	N	Mean Rank
1. I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students.	17.060	**.002**	1	21	220.14
			2	42	258.46
			3	120	182.81
			4	133	187.70
			5	75	190.09
2. I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram).	19.825	**.001**	1	21	222.40
			2	42	258.81
			3	120	190.98
			4	133	186.83
			5	75	**177.71**
3. I direct my students to share experiences with each other through social media.	11.936	**.018**	1	21	200.14
			2	42	242.89
			3	120	184.97
			4	133	202.35
			5	75	**174.98**
4. I use social media as a resource for exchanging knowledge with my students.	13.894	**.008**	1	21	224.86
			2	42	247.29
			3	120	189.30
			4	133	193.46
			5	75	**174.42**
5. I show my personal research interests through a public profile on social media.	10.185	**.037**	1	21	238.45
			2	42	228.51
			3	120	193.30
			4	133	194.45
			5	75	**172.98**
6. I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion	3.413	.491	1	21	210.02
			2	42	218.13
			3	120	194.26
			4	133	196.64

Board).			5	75	**181.33**
7. I use social media to reach conferences or other classrooms.	2.014	.733	1	21	184.98
			2	42	215.23
			3	120	190.30
			4	133	199.15
			5	75	191.87

The results in table 19a show there were significant differences among the five independent groups (i.e. academic ranks) in the first five dependent variables: *I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students*; *I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram)*; *I direct my students to share experiences with each other through social media*; *I use social media as a resource for exchanging knowledge with my students*; and *I show my personal research interests through a public profile on social media*. On the other hand, there were no significant differences among the five independent groups in the last two dependent variables: *I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board)*, and *I use social media to reach conferences or other classrooms)*. It should be noted here that the rank of teaching assistant as presented in Table 19a had the lowest rank in the majority of items about using social media in teaching in Saudi universities with mean ranks of: 177.71, 174.98, 174.42, 172.98, and181.33. This is not surprising because the majority of teaching assistants are newly graduated and do not have sufficient experience in the teaching profession to use technological methods in the process of education.

Moreover, Tukey's test was used to figure out which groups in the sample differ. Table 19b presents the results of Tukey's test to identify which academic ranks are different in regards to experiences of the use of social media in teaching.

Table 19b: Tukey's Test to Determine Which Groups of Academic Ranks Are Different In Regards to Experiences of the Use of Social Media in Teaching.

Dependent Variable	(I) 1.5. Specify academic rank:	(J) 1.5. Specify academic rank:	Mean Difference (I-J)	Sig.
1. I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students.	1	2	-.500	.674
		3	.480	.603
		4	.419	.713
		5	.385	.804
	2	1	.500	.674
		3	.980*	**.001**
		4	.919*	**.002**
		5	.885*	**.011**
	3	1	-.480	.603
		2	-.980*	**.001**
		4	-.061	.997
		5	-.095	.991
	4	5	-.034	1.000
2. I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram).	1	2	-.476	.673
		3	.407	.702
		4	.464	.581
		5	.537	.484
	2	1	.476	.673
		3	.883*	**.003**
		4	.940*	**.001**
		5	1.013*	**.001**
	3	1	-.407	.702
		2	-.883*	**.003**
		4	.057	.997
		5	.130	.965
	4	5	.073	.996
3. I direct my students to share experiences with each other through social media.	1	2	-.500	.648
		3	.229	.955
		4	.005	1.000
		5	.349	.840
	2	1	.500	.648
		3	.729*	**.026**
		4	.505	.227
		5	.849*	**.012**
	3	1	-.229	.955
		2	-.729*	**.026**
		4	-.224	.692
		5	.120	.976
	4	5	.344	.410
4. I use social media as a resource for exchanging knowledge with my students.	1	2	-.238	.960
		3	.448	.592
		4	.388	.708
		5	.648	.259
	2	1	.238	.960
		3	.686*	**.028**
		4	.627	.052

		5	.886*	**.004**
	3	1	-.448	.592
		2	-.686*	**.028**
		4	-.059	.996
		5	.200	834
	4	5	.259	.640
5. I show my personal research interests through a public profile on social media.	1	2	.048	1.000
		3	.483	.519
		4	.486	.505
		5	.773	.116
	2	1	-.048	1.000
		3	.436	.338
		4	.439	.318
		5	.726*	**.033**
	3	1	-.483	.519
		2	-.436	.338
		4	.003	1.000
		5	.290	.555
	4	5	.287	.546

Note: Professor (1), Associate professor (2), Assistant professor (3), Instructor (4), and Teaching assistant(5)

As presented in Table 19b, for example, the first item shows the differences between academic rank 2 (associate professor) and academic ranks 3, 4 and 5(assistant professor, instructor, and Teaching assistant). Also, academic rank 2 (associate professor) is greater than academic ranks 3, 4 and 5 regarding use of social media (e.g. Twitter, Facebook, Instagram) in communication with my students. In the same way, we can compare academic ranks in other items.

In addition, Mann-Whitney U Test was used instead of T-test that had been planned in data analysis techniques of this study because assumptions of normality and homogeneity were not met in the data for this question. It was used to test significant differences between two independent groups—gender regarding faculty members' experiences in using social media in teaching.

Table 20: Significant Differences between Gender of Faculty Members Regarding Experience in Using Social Media in Teaching

Items	Mann-Whitney U	Sig
1. I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students.	17683.000	.194
2. I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram).	18587.000	.619
3. I direct my students to share experiences with each other through social media.	18802.500	.783
4. I use social media as a resource for exchanging knowledge with my students.	18654.500	.680
5. I show my personal research interests through a public profile on social media.	18758.500	.751
6. I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board).	18048.500	.331
7. I use social media to reach conferences or other classrooms.	18960.000	.895

As presented in Table 20, there were no significant differences between males and females regarding faculty members' experiences in using social media in teaching.

The result of this study about the difference between gender faculty members regarding experiences in using social media in teaching is different from the results of other studies carried out by Kim & Yoo (2016) and Ularu (2014) which revealed gender difference. At the same time, the results of this study are consistent with other studies carried out by Anduwa-Ogiegbaen & Isah (2005) and Aifan (2015) which revealed no gender difference in use of technology for instructional purposes, as discussed in the literature review of this study.

4.5.2 Results of Research Question 2: What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

Participants were asked about their attitudes towards using social media in flipped classrooms. In this section, there were eight items. The data were collected and coded by using a five-level Likert-Scale as following: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1). Table 21 and Figure 13 present faculty members' attitudes towards using social media in flipped classrooms.

Table 21: Percentages of Faculty Members' Attitudes Towards Using Social Media in Flipped Classrooms

	Items	*Percentages of Participants' Responses*				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	I think that social media is useful in implementing a flipped classroom.	26.6%	51.4%	15.9%	3.8%	2.3%
		78%			6.1%	
2.	I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom.	24.8%	54%	13.8%	4.3%	3.1%
		78.8%			7.4%	
3.	I think that using social media in a flipped classroom generates communication between faculty members and students.	30.7%	52.7%	11.5%	3.1%	2%
		83.4%			5.1%	
4.	I think that using social media in a flipped classroom creates interactive learning environments.	28.9%	51.9%	14.4%	3.3%	1.5%
		80.8%			4.8%	
5.	I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom.	26.9%	50.1%	16.9%	4.6%	1.5%
		77%			6.1%	

6.	When I use social media in a flipped classroom, I address diverse learner preferences and desires.	24.6%	41.2%	28.1%	4.6%	1.5%
		65.8%			6.1%	
7.	I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere.	33%	49.1%	12.8%	3.1%	2%
		82.1%			5.1%	
8.	I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.).	40.4%	44%	11.2%	2.6%	1.8%
		84.4%			4.4%	

Figure 13. Percentage for Faculty Members' Attitudes Towards Using Social Media in Flipped Classrooms

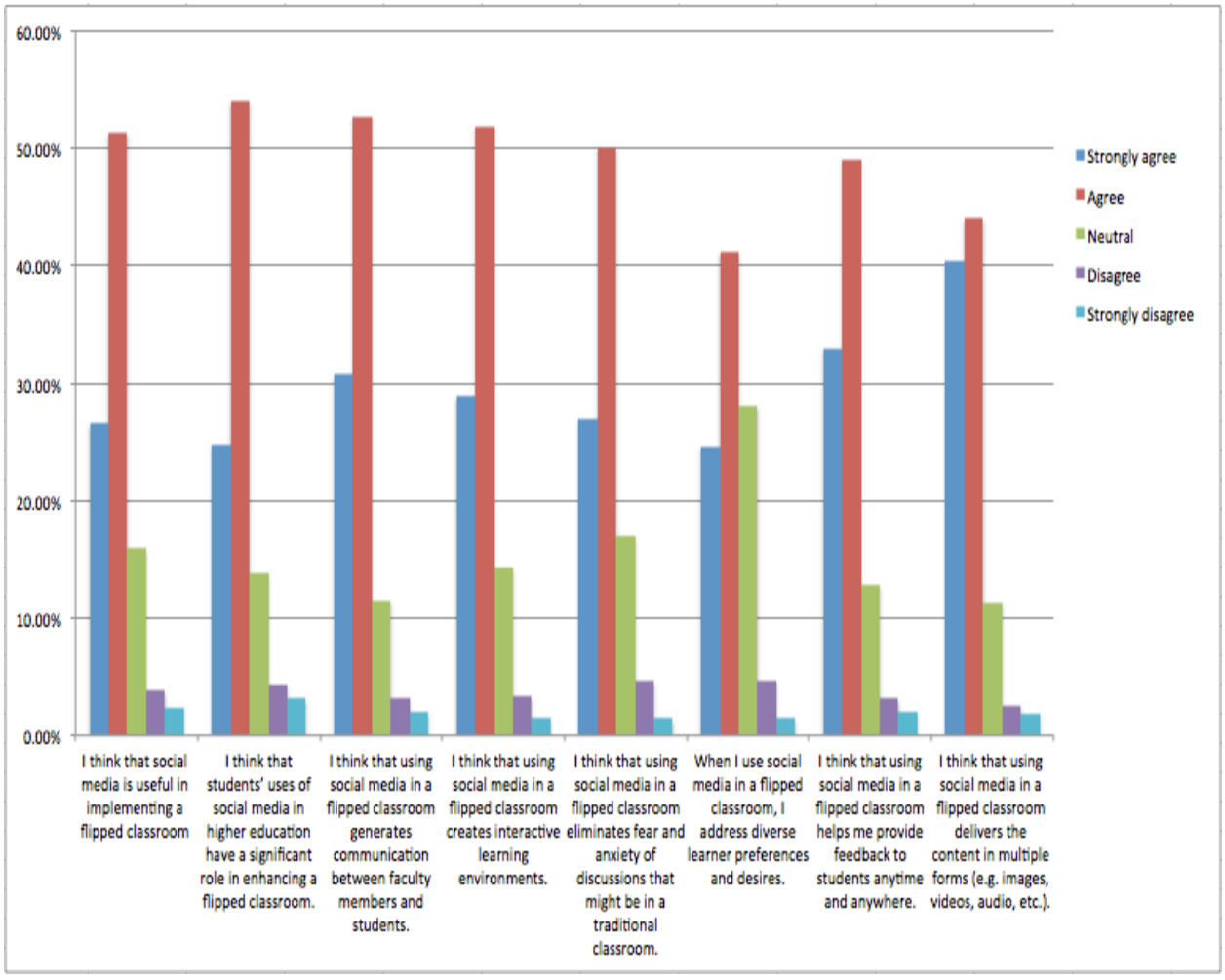


Table 22 presents the descriptive statistics for faculty members' attitudes towards using social media in flipped classrooms in Saudi universities by determining the Mean, Median, Mode and Standard Deviation (SD) for all items related to faculty members' attitudes towards using social media in flipped classrooms.

Table 22: Descriptive Statistics for *Faculty Members' Attitudes Towards Using Social Media in Flipped Classrooms*

		The descriptive statistics			
		Mean	Median	Mode	SD
1.	I think that social media is useful in implementing a flipped classroom.	3.96	4	4	0.88
2.	I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom.	3.93	4	4	0.91
3.	I think that using social media in a flipped classroom generates communication between faculty members and students.	4.07	4	4	0.85
4.	I think that using social media in a flipped classroom creates interactive learning environments.	4.03	4	4	0.83
5.	I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom.	3.96	4	4	0.87
6.	When I use social media in a flipped classroom, I address diverse learner preferences and desires.	3.83	4	4	0.90
7.	I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere.	4.08	4	4	0.87
8.	I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.).	4.19	4	4	0.86
	Average	4	4	4	0.87

Tables 21 and 22 and Figure 13 summarize participants' attitudes towards using social media in flipped classroom. The first item was *"I think that social media is useful in implementing a flipped classroom"*. More than three-quarters of participants indicated "Agree"

(51.4%, n= 201), or "Strongly agree" (26.6%, n= 104). Only a small number of participants indicated "Disagree" (3.8%, n= 15), or "Strongly disagree" (2.3%, n= 9), and 15.9% of participants (n= 62) indicated "Neutral".

The second item was *"I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom"*. More than three-quarters of participants indicated "Agree" (54%, n= 211), or "Strongly agree" (24.8%, n= 97). Only a small number of participants indicated "Disagree" (4.3%, n=17), or "Strongly disagree" (3.1%, n= 12), and 13.8% of participants (n= 54) indicated "Neutral".

The third item was *"I think that using social media in a flipped classroom generates communication between faculty members and students"*. The vast majority of participants indicated "Agree" (52.7%, n= 206), or "Strongly agree" (30.7%, n= 120). Only a small number of participants indicated "Disagree" (3.1%, n= 12), or "Strongly disagree" (2%, n= 8), and 11.5% of participants (n= 45) indicated "Neutral".

The fourth item was *"I think that using social media in a flipped classroom creates interactive learning environments"*. The vast majority of participants indicated "Agree" (51.9%, n= 203), or "Strongly agree" (28.9%, n= 113). Only a small number of participants indicated "Disagree" (3.3%, n= 13), or "Strongly disagree" (1.5%, n= 6), and 14.4% of participants (n= 56) indicated "Neutral".

The fifth item was *"I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom"*. More than three-quarters of participants indicated "Agree" (50.1%, n= 196), or "Strongly agree" (26.9%, n=105). Only a small number of participants indicated "Disagree" (4.6%, n= 18), or "Strongly disagree" (1.5%, n= 6), and 16.9% of participants (n= 66) indicated "Neutral".

The sixth item was *"when I use social media in a flipped classroom, I address diverse learner preferences and desires"*. More than half of participants indicated "Agree" (41.2%, n= 161), or "Strongly agree" (24.6%, n= 96). Only a small number of participants indicated "Disagree" (4.6%, n= 18), or "Strongly disagree" (1.5%, n= 6), and 28.1% of participants (n= 110) indicated "Neutral".

The seventh item was *"I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere"*. The vast majority of participants indicated "Agree" (49.1%, n= 192), or "Strongly agree" (33%, n= 129). Only a small number of participants indicated "Disagree" (3.1%, n= 12), or "Strongly disagree" (2%, n= 8), and 12.8% of participants (n= 50) indicated "Neutral".

The eighth item was *"I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.)"*. The vast majority of participants indicated "Agree" (44%, n= 172), or "Strongly agree" (40.4%, n= 158). Only a small number of participants indicated "Disagree" (2.6%, n= 10), or "Strongly disagree" (1.8%, n= 7), and 11.2% of participants (n= 44) indicated "Neutral".

The descriptive statistics for faculty members' attitudes towards using social media in flipped classrooms shows that "Strongly agree" and "Agree" received the highest rating for all items while "Disagree" and "Strongly disagree" had the lowest rating of all items in this section. 84.4% (n= 330) of participants were agreed to strongly agreed that *using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.)*, 4.4% (n= 17) were disagreed to strongly disagreed, and 11.2% (n= 44) were neutral, with a median= 4; followed by 83.4% (n= 326) of participants were agreed to strongly agreed that *using social media in a flipped classroom generates communication between faculty members and students*,

5.1% (20) were disagreed to strongly disagreed, and 11.5% (n= 45) were neutral, with a median of 4; followed by three 82.1% (n= 321) were agreed to strongly agreed that *using social media in a flipped classroom helps them provide feedback to students anytime and anywhere*, 5.1% (n= 20) were disagreed to strongly disagreed, and 12.8% (n= 50) were neutral, with a median of 4; followed by 80.8% (n= 316) were agreed to strongly agreed that *using social media in a flipped classroom creates interactive learning environments*, 4.8% (n= 19) were disagreed to strongly disagreed, and 14.3% (56) were neutral, with a median of 4; followed by 78.8% (n= 308) of participants were agreed to strongly agreed that *students' uses of social media in higher education have a significant role in enhancing a flipped classroom*, 7.4% (n= 29) were disagreed to strongly disagree, 13.8% (n= 54) were neutral, with a median of 4; followed by 78% (n= 305) of participants were agreed to strongly agreed that *social media is useful in implementing a flipped classroom*, 6.1% (n= 24) were disagreed to strongly disagreed, and 15.9% (n= 62) were neutral, with a median of 4; followed by 77% (n= 301) of participants were agreed to strongly agreed that *using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom*, 6.1% (n= 24) were disagreed to strongly disagreed, and 16.9% (n= 66) were neutral, with a median of 4; followed by 65.8% (n= 257) of participants were agreed to strongly agreed that *when they use social media in a flipped classroom, they address diverse learner preferences and desires*, 6.1% (n=24) were disagreed to strongly disagreed, and 28.1% (n= 110) were neutral, with a median of 4.

Generally, the overall median for all items of faculty members' attitudes towards using social media in flipped classrooms was 4, which indicates that faculty members in Saudi universities tend to be mostly positive towards using social media in flipped classrooms, especially in the role of social media as a flipped classroom in delivering the content in multiple

forms, generating communication between faculty members and students, providing feedback to students anytime and anywhere, and creating interactive learning environment.

The interviewees were asked about the role of using social media as a flipped classroom tool in the teaching process and in what ways the use of social media as a flipped classroom play an important role to enhance the educational process. All interviewees without exception asserted that the use of social media as a flipped classroom plays a positive role in improving and enhancing education. Interviewee #1 mentioned that the use of social media as a flipped classroom tool has an important role because the students cannot discover only through discussion and because the traditional method in the classroom transforms the student into a repository of information that increases and decreases by the amount of information provided by the teacher in the lecture, but the flipped classroom makes the student a central part of the educational process. He suggested that the students should participate in the building of the flipped classroom through assigning students to find educational materials related to the topic of the lecture and sharing them with their colleagues.

Interviewee #2 reported that the use of social media as a flipped classroom tool plays a significant role in improving the education process because employing the flipped classroom with the use of social media help the students to express their points of view and to overcome the fear of making mistakes in front of colleagues. He stated that the flipped classroom that uses social media is effective when it depends on dialogue and discussions among the students before going to the traditional lecture.

Interviewee #3 asserted that the use of social media in the flipped classroom has an important role in the educational process because the content is delivered to the learner in multiple forms, such as video, pictures or discussions, which in turn serve a large number of

learners because it takes into account the diversity of learners according to their desires in the way of learning. He suggested that the flipped classroom should be implemented by using social media through creating a partnership between universities or colleges in order to involve students from different places, but in the same field. This will lead to the transfer knowledge and experiences among students. He also suggested that the courses should be linked to the labor market. For example, the topics related to industry and engineering should be linked with some factories because students can see real events. In addition, he suggested that the flipped classroom can be created by using social media through linking it with educational channels and conferences.

Interviewee #4 mentioned the flipped classroom is a modern and important method because it makes the student an effective element in the educational process. The use of social media in creating the flipped classroom allows the student to research, discuss, and have respect for others. He suggested that creating groups through the use of social media (e.g. Twitter and WhatsApp) as a flipped classroom tool play an important role in creating an interactive learning environment.

Interviewee #5 reported that the use of social media as a flipped classroom tool is very effective way because students are in constant contact with the teacher and the content is available at any time. She stressed that social media increase their effectiveness as a flipped classroom tool whenever the content is presented in multiple formats.

Interviewee #6 reported that social media are usually easy and available to students, so the use of social media in educational process whether as a flipped classroom or with other instructional strategies will play an important role to enhance learning. She suggested to implement the flipped classroom by the use of social media through creating groups on

WhatsApp and to provide students with the content of the lecture to allow them to discuss and respond to each other.

Interviewee #7 reported that the use of social media as a flipped classroom tool is highly effective because they provide students with the content before the lecture in more attractive ways and saves time during the lecture, which may be wasted on the basic things. She also stated that the lecture time may not be enough for students to master all the skills required, so providing the students the content before the lecture gives students a chance to review and prepare for the lecture. In addition, she mentioned that the use of technology, especially social media, as a flipped classroom tool allows the student to present content to their colleagues. She reported that all ways of the use of social media as a flipped classroom are effective, but the way that focuses on discussion and interaction among students is more effective.

Interviewee #8 did not differ from other interviewees in her opinion about the use of social media as a flipped classroom. She asserted that the use of social media as a flipped classroom tool is effective in preparing students for upcoming lectures through providing them with different instructional resources in multiple formats (e.g. videos, links). Also, these allow students to repeat the content several times as needed. She asserted that the use of social media as flipped classrooms is more effective when students are positive elements and not merely receivers of information. Also, she focused on the diversity of technology and activities that should be used when employing social media as flipped classroom (e.g. images, videos, and discussions).

Generally, the results of the interviews were very consistent with the results of the descriptive statistics in regards to faculty members' attitudes towards using social media in flipped classrooms. This indicates that faculty members in Saudi universities have positive

attitudes towards social media in flipped classrooms. Also, the results of the interviews focused highly on the diversity of technology and creating discussions with the use of social media as a flipped classroom tool.

Furthermore, the participants throughout the survey in this study were divided into two independent groups: less experienced faculty members (1-6 years, n= 200) and more experienced faculty members (7 years or more, n= 191). Mann-Whitney U Test was used to test differences between two independent groups (less experienced and more experienced faculty members) in Saudi universities in using social media as a flipped classroom in the teaching process.

Table 23: Differences between Less Experienced and More Experienced faculty members Towards Using Social Media as a Flipped Classroom in the Teaching Process

Items	Mann-Whitney U	Sig.
1. I think that social media is useful in implementing a flipped classroom.	17053.500	.052
2. I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom.	18306.000	.434
3. I think that using social media in a flipped classroom generates communication between faculty members and students.	17501.000	.115
4. I think that using social media in a flipped classroom creates interactive learning environments.	17947.000	.258
5. I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom.	18187.000	.375
6. When I use social media in a flipped classroom, I address diverse learner preferences and desires.	17742.500	.198
7. I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere.	18170.500	.365
8. I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.).	18588.000	.619

Depending on the results of Mann-Whitney U Test in Table 23, there were no significant differences between less experienced and more experienced faculty members regarding their attitudes towards using social media as a flipped classroom.

In addition, Mann-Whitney U Test was used to test significant differences between two independent groups—males and females—regarding faculty members' attitudes towards using social media in flipped classrooms.

Table 24: Differences Between Male and Female Faculty Members Regarding Their Attitudes Towards Using Social Media in Flipped Classrooms

Items	Mann-Whitney U	Sig
1. I think that social media is useful in implementing a flipped classroom.	17803.500	.204
2. I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom.	17562.000	.129
3. I think that using social media in a flipped classroom generates communication between faculty members and students.	18296.500	.426
4. I think that using social media in a flipped classroom creates interactive learning environments.	18011.500	.284
5. I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom.	19069.500	.973
6. When I use social media in a flipped classroom, I address diverse learner preferences and desires.	18983.500	.909
7. I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere.	17871.500	.230
8. I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.).	18125.000	.341

As presented in Table 24, there were no significant differences between males and females in their attitudes towards using social media as a flipped classroom. This result is consistent with another study carried out at King Abdul-Aziz University, Saudi Arabia by Aifan (2015) about Saudi students' attitudes towards using social media to support their learning. The

study concluded that there is no difference between male and female Saudi students' attitudes toward using social media in order to support their learning.

4.5.3 Results of Research Question 3: How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?

Participants were asked about the learning activities that they used in employing social media to implement a flipped classroom in order to prepare students for the upcoming lecture. In this section, there were sixteen items related to four categories of the R2D2 Model, and each one of the R2D2 categories (Reading, Reflecting, Displaying, or Doing) has four items. The data were collected and coded using a five-level Likert-Scale as following: Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1). The data analysis for each one of the R2D2 categories will be presented separately in Tables 25-34 and Figures 14-18.

4.5.3.1 Reading Category of the R2D2 Model

Table 25: Percentages for Faculty Members' Use Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reading Category of the R2D2 Model)

		Percentages and Numbers of Participants' Responses				
		Always	Often	Sometimes	Rarely	Never
1.	Providing students with some online reading materials related to content of lecture	19.7% n= 77	34.8% n= 136	29.2% n= 114	7.1% n= 28	9.2% n= 36
2.	Providing students with audio materials related to content of lecture	10.7% n= 42	31.2% n= 122	30.4% n= 119	13.8% n= 54	13.8% n=54
3.	Creating online chats including some questions and answers related to the content of the lecture among students (i.e. each other) and with the instructor	10.5% n= 41	30.9% n= 121	24.6% n= 96	15.3% n= 60	18.7% n= 73
4.	Assigning students to find and read a certain number of articles related to the topic of the lecture	17.1% n= 67	34.8% n= 136	25.1% n= 98	14.3% n= 56	8.7% n= 34

Figure 14. Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reading Category of the R2D2 Model)

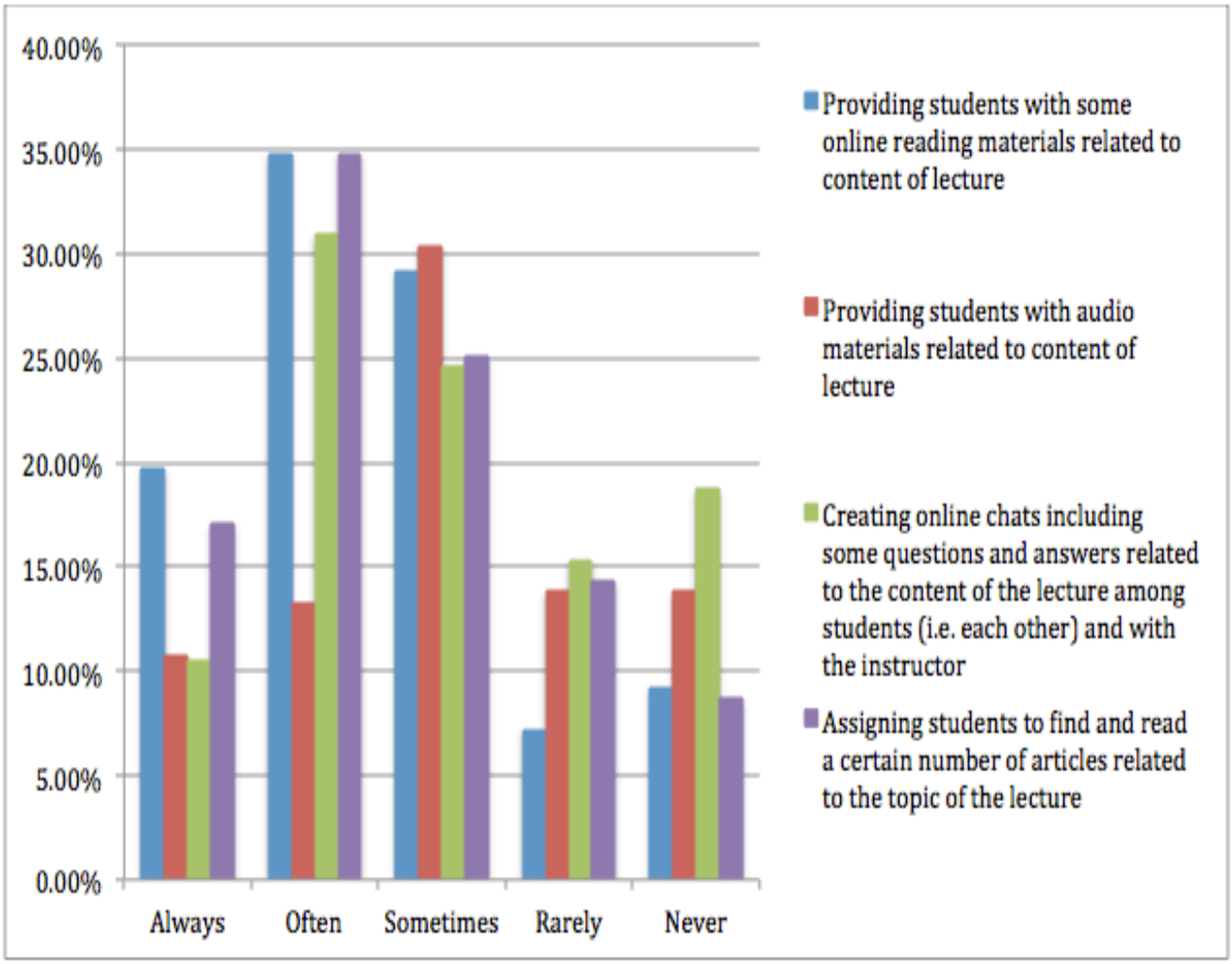


Table 26 presents the descriptive statistics for faculty members' use of social media as a flipped classroom tool to address students' learning preferences (Activities of Reading category of the R2D2 Model) through determining the mean, median, mode and standard deviation (SD) for all items related to activities of the reading category of the R2D2 Model.

Table 26: Descriptive Statistics for *Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reading Category of the R2D2 Model)*

		The descriptive statistics			
		Mean	Median	Mode	SD
1.	Providing students with some online reading materials related to content of lecture	3.49	4	4	1.15
2.	Providing students with audio materials related to content of lecture	3.11	3	4	1.19
3.	Creating online chats including some questions and answers related to the content of the lecture among students (i.e. each other) and with the instructor	2.99	3	4	1.27
4.	Assigning students to find and read a certain number of articles related to the topic of the lecture	3.37	4	4	1.17
	Average	3.24	3.5	4	1.19

Tables 25 and 26 and Figure 14 summarize participants' reported uses of social media as a flipped classroom tool to address students' learning preferences at the activities of reading category of the R2D2 Model. The first item of reading category of the R2D2 Model was *"Providing students with some online reading materials related to content of lecture"*. More than half of the participants reported "Always" (19.7%, n= 77), or "Often" (34.8%, n= 136). Only a small number of participants indicated "Rarely" (7.1%, n= 28), or "Never" (9.2%, n= 36), and 29.2% (n= 114) indicated "Sometimes".

The second item of the reading category of the R2D2 Model was *"Providing students with audio materials related to content of lecture"*. A large number of participants indicated "Often" (31.2%, n= 122), or "Always" (10.7%, n= 42), while a small number of participants indicated "Rarely" or "Never" (13.8%, n= 54; for each of them), and 30.4% (n= 119) indicated "Sometimes".

The third item of the reading category of the R2D2 Model was *"Creating online chats including some questions and answers related to the content of the lecture among students (i.e.*

each other) and with the instructor". A large number of participants indicated "Often" (30.9%, n=121), or "Always" (10.5%, n= 41), while a small number of participants indicated "Rarely"(15.3%, n= 60) or "Never" (18.7%, n= 73), and 24.6% (n= 96) indicated "Sometimes".

The fourth item of the reading category of the R2D2 Model was *"Assigning students to find and read a certain number of articles related to the topic of the lecture"*. About half of the participants reported "Often" (34.8%, n= 136), or "Always" (17.1%, n= 67). Only a small number of participants indicated "Never" (8.7%, n= 34), or "Rarely" (14.3%, n= 56), and 25.1% (n= 98) indicated "Sometimes".

4.5.3.2 Reflecting Category of the R2D2 Model

Table 27: Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reflecting Category of the R2D2 Model).

	Items	*Percentages and Numbers of Participants' Responses*				
		Always	Often	Sometimes	Rarely	Never
1.	Asking the students to discuss with each other in online discussion forums including some content related to the topic of the lecture	10.7% n= 42	28.9% n= 113	26.1% n= 103	18.9% n= 74	15.1% n= 59
2.	Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture	9.5% n= 37	21.2% n= 83	20.2% n= 79	24.6% n= 96	24.6% n= 96
3.	Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture	8.2% n= 32	23% n= 90	21% n= 82	19.7% n= 77	28.1% n= 110
4.	Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that	5.9% n= 23	19.2% n= 75	23.5% n= 92	22% n= 86	29.4% n=115

Figure 15. Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reflecting Category of the R2D2 Model)

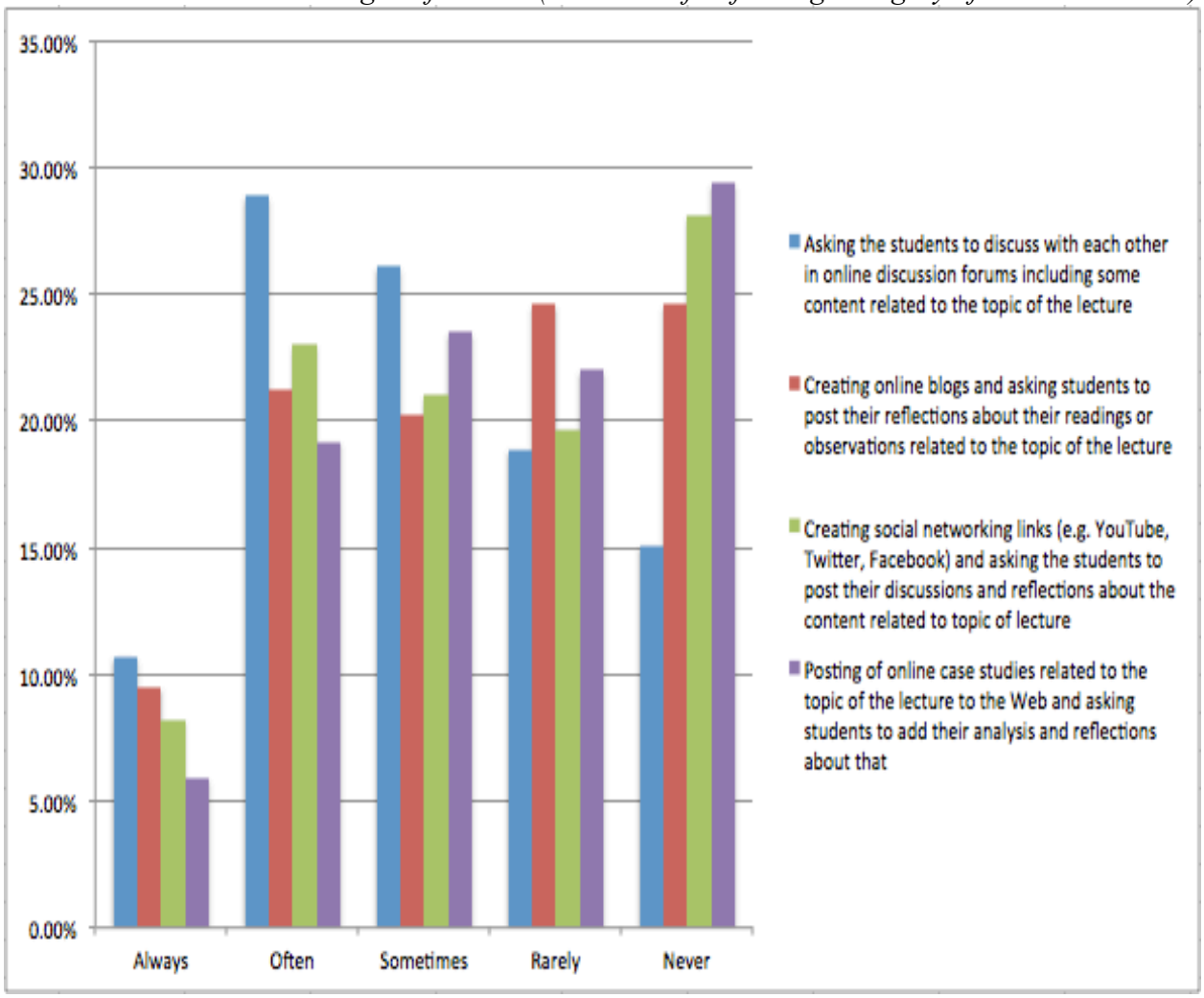


Table 28 presents the descriptive statistics for faculty members' use of social media as a flipped classroom tool to address students' learning preferences (Activities of Reflecting category of the R2D2 Model) through determining the mean, median, mode and standard deviation (SD) for all items related to activities of the reflecting category of the R2D2 Model.

Table 28: Descriptive Statistics for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Reflecting Category of the R2D2 Model)

	Items	*The descriptive statistics*			
		Mean	Median	Mode	SD
1.	Asking the students to discuss with each other in online discussion forums including some content related to the topic of the lecture	3.01	3	4	1.23
2.	Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture	2.66	3	3	1.30
3.	Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture	2.63	3	1	1.32
4.	Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that	2.50	2	1	1.25
	Average	2.7	2.75	2.25	1.27

Tables 27 and 28 and Figure 15 summarize participants' reported uses of social media as a flipped classroom tool to address students' learning preferences at the activities of reflecting category of the R2D2 Model. The first item of activities of the reflecting category of the R2D2 Model was *"Asking the students to discuss with each other in online discussion forums including some content related to the topic of the lecture"*. More than a third of participants reported "Often" (28.9%, n= 113), or "Always" (10.7%, n= 42). 26.1% (n= 103) reported "Sometimes", 18.9% (n= 74) reported "Rarely", and 15.1% (n= 59) reported "Never".

The second item of activities of the reflecting category of the R2D2 Model was *"Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture"*. About half of the participants reported "Rarely" (24.6%, n= 96), or "Never" (24.6%, n= 96). Only a small number of participants indicated "Always" (9.5%, n= 37), or "Often" (21.2%, n= 83), and 20.2% (n= 79) indicated "Sometimes".

The third item of activities of the reflecting category of the R2D2 Model was *"Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture"*. About half of the participants reported "Never" (28.1%, n= 110), or "Rarely" (19.7%, n= 77). About third of participants reported "Often" (23%, n= 90), or "Always" (8.2%, n= 32), and 21% (n= 82) indicated "Sometimes".

The fourth item of activities of the reflecting category of the R2D2 Model was *"Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that"*. More than half of the participants reported "Never" (29.4%, n= 115), or "Rarely" (22%, n= 86). Only a small number of participants indicated "Always" (5.9%, n= 23), or "Often" (19.2%, n= 75), and 23.5% (n= 92) selected "Sometimes".

4.5.3.3 Displaying Category of the R2D2 Model

Table 29: Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Displaying Category of the R2D2 Model)

	Items	*Percentages and Numbers of Participants' Responses*				
		Always	Often	Sometimes	Rarely	Never
1.	Creating instructional video that includes the content related to the lecture and posting it on a YouTube	9% n= 35	23.3% n= 91	21.5% n= 84	14.1% n= 55	32.2% n= 126
2.	Asking students to watch online conferences or events related to the topic of the lecture	11.5% n= 45	21.7% n= 85	26.1% n= 102	17.6% n= 69	23% n= 90
3.	Creating virtual field trips corresponding to the content of the lecture and asking students to view them	4.1% n= 16	10.7% n= 42	17.1% n= 67	20.2% n= 79	47.8% n= 187
4.	Providing students with figures or charts related to the content of the lecture	15.6% n= 61	27.6% n= 108	26.3% n= 103	16.1% n= 63	14.3% n= 56

Figure 16. Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Displaying Category of the R2D2 Model)

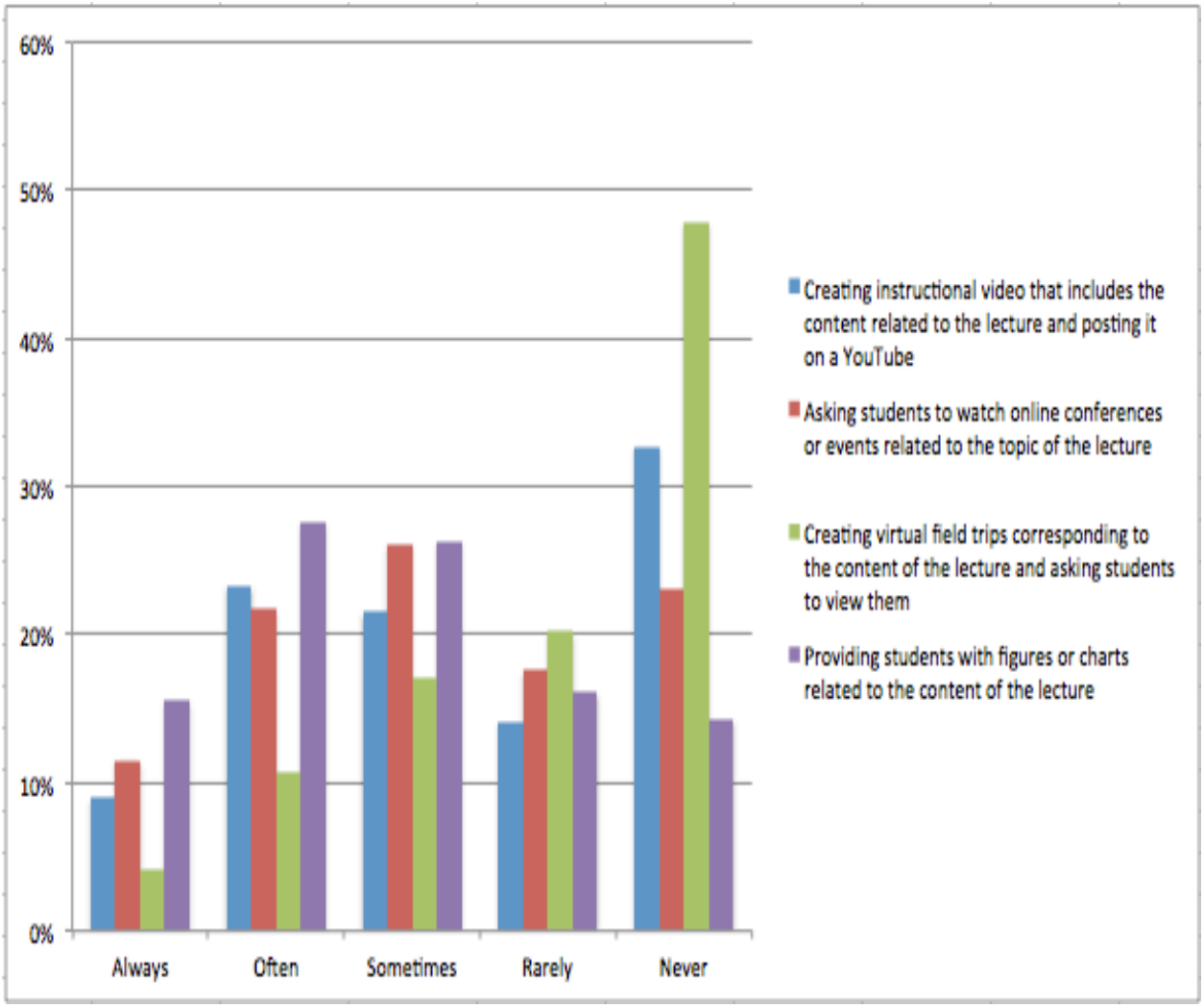


Table 30 presents the descriptive statistics for faculty members' use of social media as a flipped classroom tool to address students' learning preferences (Activities of Displaying category of the R2D2 Model) through determining the mean, median, mode and standard deviation (SD) for all items related to activities of the displaying category of the R2D2 Model.

Table 30: Descriptive Statistics for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Displaying Category of the R2D2 Model)

	Items	*The descriptive statistics*			
		Mean	Median	Mode	SD
1.	Creating instructional video that includes the content related to the lecture and posting it on a YouTube	2.63	3	1	1.37
2.	Asking students to watch online conferences or events related to the topic of the lecture	2.81	3	3	1.32
3.	Creating virtual field trips corresponding to the content of the lecture and asking students to view them	2.03	2	1	1.20
4.	Providing students with figures or charts related to the content of the lecture	3.14	3	4	1.27
	Average	2.65	2.75	2.25	1.29

Tables 29 and 30 and Figure 16 summarize participants' reported uses of social media as a flipped classroom tool to address students' learning preferences at the activities of displaying category of the R2D2 Model. The first item of activities of the displaying category of the R2D2 Model was *"Creating instructional video that includes the content related to the lecture and posting it on a YouTube"*. A large number of participants reported "Never" (32.2%, n= 126), or "Rarely" (14.1%, n= 55). About third of participants reported "Often" (23.3%, n= 91), or "Always" (9%, n= 35), and 21.5% (n= 84) indicated "Sometimes".

The second item of activities of displaying category of the R2D2 Model was *"Asking students to watch online conferences or events related to the topic of the lecture"*. A large number of participants reported "Never" (23%, n= 90), or "Rarely" (17.6%, n= 69). About third of participants reported "Often" (21.7%, n= 85), or "Always" (11.5%, n= 45), and 26.1% (n= 102) indicated "Sometimes".

The third item of activities of the displaying category of the R2D2 Model was *"Creating virtual field trips corresponding to the content of the lecture and asking students to view them"*. About half of the participants reported "Never" (47.8% (n= 187) and 20.2% (n= 79) reported

"Rarely". Only a small number of participants indicated "Always" (4.1%, n= 16), or "Often" (10.7%, n= 42), and 17.1% (n= 67) indicated "Sometimes".

The fourth item of activities of the displaying category of the R2D2 Model was *"Providing students with figures or charts related to the content of the lecture"*. A large number of the participants reported "Often" (27.6%, n= 108), or "Always" (15.6%, n= 61). Only a small number of participants indicated "Never" (14.3%, n= 56), or "Rarely" (16.1%, n= 63), and 26.3% (n= 103) indicated "Sometimes".

4.5.3.4 Doing Category of the R2D2 Model

Table 31: Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Doing Category of the R2D2 Model)

	Items	*Percentages and Numbers of Participants' Responses*				
		Always	Often	Sometimes	Rarely	Never
1.	Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners	10.2% n= 40	18.9% n= 74	20.5% n= 80	15.3% n= 60	35% n= 137
2.	Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture	6.1% n= 24	17.4% n= 68	20.7% n= 81	18.9% n= 74	36.8% n= 144
3.	Providing students with online simulation games used to explain concepts and principles related to the content of the lecture.	5.6% n= 22	9.7% n= 38	15.9% n= 62	19.7% n= 77	49.1% n= 192
4.	Using online site and asking the students to add summaries or comments related to the content of the lecture	6.4% n= 25	16.6% n= 65	28.6% n= 112	17.1% n= 67	31.2% n= 122

Figure 17. Percentages for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Doing Category of the R2D2 Model)

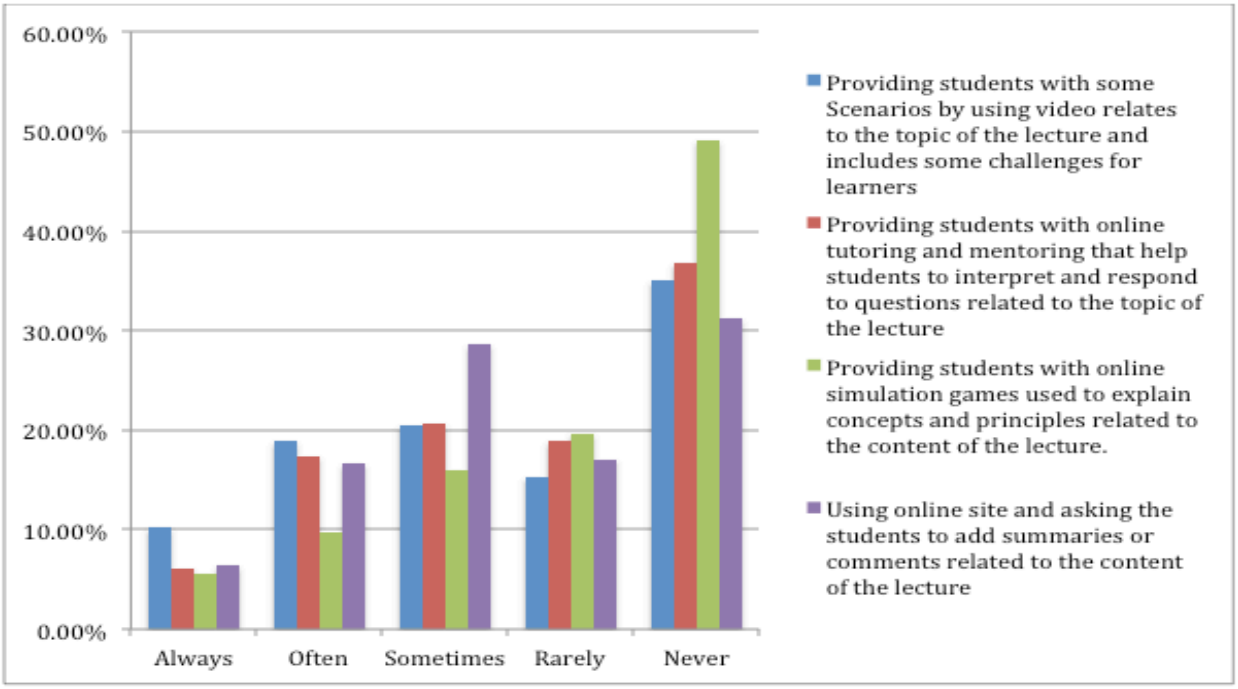


Table 32 presents the descriptive statistics for faculty members' use of social media as a flipped classroom tool to address students' learning preferences (Activities of Doing category of the R2D2 Model) through determining the mean, median, mode and standard deviation (SD) for all items related to activities of the doing category of the R2D2 Model.

Table 32: Descriptive Statistics for Faculty Members' Use of Social Media as a Flipped Classroom Tool to Address Students' Learning Preferences (Activities of Doing category of the R2D2 Model)

	Items	*The descriptive statistics*			
		Mean	Median	Mode	SD
1.	Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners	2.54	2	1	1.39
2.	Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture	2.37	2	1	1.30
3.	Providing students with online simulation games used to explain concepts and principles related to the content of the lecture.	2.03	2	1	1.24

4.	Using online site and asking the students to add summaries or comments related to the content of the lecture	2.50	3	1	1.26
	Average	2.36	2.25	1	1.29

Tables 31 and 32 and Figure 17 summarize participants' reported uses of social media as a flipped classroom tool to address students' learning preferences at the activities of doing category of the R2D2 Model. The first item of activities of the doing category of the R2D2 Model was *"Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners"*. More than a third of participants reported "Never" (35%, n= 137) and 15.3% (n= 60) reported "Rarely". Only a small number of participants indicated "Always" (10.2%, n= 40), or "Often" (18.9%, n= 74), and 20.5% (n= 80) indicated "Sometimes".

The second item of activities of the doing category of the R2D2 Model was *"Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture"*. More than a third of participants reported "Never" (36.8%, n= 144) and 18.9% (n= 74) reported "Rarely". Only a small number of participants indicated "Always" (6.1%, n=24), or "Often" (17.4%, n= 68), and 20.7% (n= 81) indicated "Sometimes".

The third item of activities of the doing category of the R2D2 Model was *"Providing students with online simulation games used to explain concepts and principles related to the content of the lecture"*. About half of the participants reported "Never" (49.1%, n= 192) and 19.7% (n= 77) reported "Rarely". Only a small number of participants indicated "Always" (5.6%, n= 22), or "Often" (9.7%, n= 38), and 15.9% (n= 62) indicated "Sometimes".

The fourth item of activities of the doing category of the R2D2 Model was *"Using the online site and asking the students to add summaries or comments related to the content of the*

lecture". About third of participants reported "Never" (31.2%, n= 122) and 17.1% (n= 67) reported "Rarely". Only a small number of participants indicated "Always" (6.4%, n= 25), or "Often" (16.6%, n= 65), and 28.6% (n= 112) indicated "Sometimes".

Through statistical analysis of learning activities of the R2D2 Model, there were two activities of the reading category with a median of 4, "*Providing students with some online reading materials related to content of lecture*" and "*Assigning students to find and read a certain number of articles related to the topic of the lecture*". In contrast, there was no activity of the other categories of the R2D2 Model that had a median of 4. In the reflecting category, three activities had a median of 3: "*Asking the students to discuss with each other in online discussion forums including some content related to the topic of the lecture*", "*Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture*", and "*Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture*". One activity in this category had a median of 2: "*Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that*". Also, in the displaying category, three activities had a median of 3: "*Creating instructional video that includes the content related to the lecture and posting it on a YouTube*", "*Asking students to watch online conferences or events related to the topic of the lecture*", and "*Providing students with figures or charts related to the content of the lecture*". One activity had a median of 2. In the doing category, three activities had a median of 2: "*Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners*", "*Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture*", and "*Providing students*

with online simulation games used to explain concepts and principles related to the content of the lecture". One activity had a median of 3: "*Using online site and asking the students to add summaries or comments related to the content of the lecture*". This means that most activities used by faculty members in Saudi universities in order to address students' learning preferences fall into the reading category, followed by the reflecting, the displaying, and doing categories in descending order, respectively.

Also, it should be mentioned that "Never" was the highest rating for all items of the doing category and for three items of the reflecting and displaying categories. On the other hand, "Often" was the highest rating for all items of the reading category. Based on these results, faculty members in Saudi universities through use of social media as a flipped classroom tool focus highly on the learning activities that address verbal and auditory students.

To support descriptive statistics, one Way repeated measures ANOVA was used to test significant differences between categories of the R2D2 model of how faculty members use social media as a flipped classroom tool to address students' learning preferences per category of the R2D2 model. Table 33 presents tests of within-subject effects among the R2D2 categories.

Table 33: Tests of Within-Subject Effects Among the R2D2 Categories.

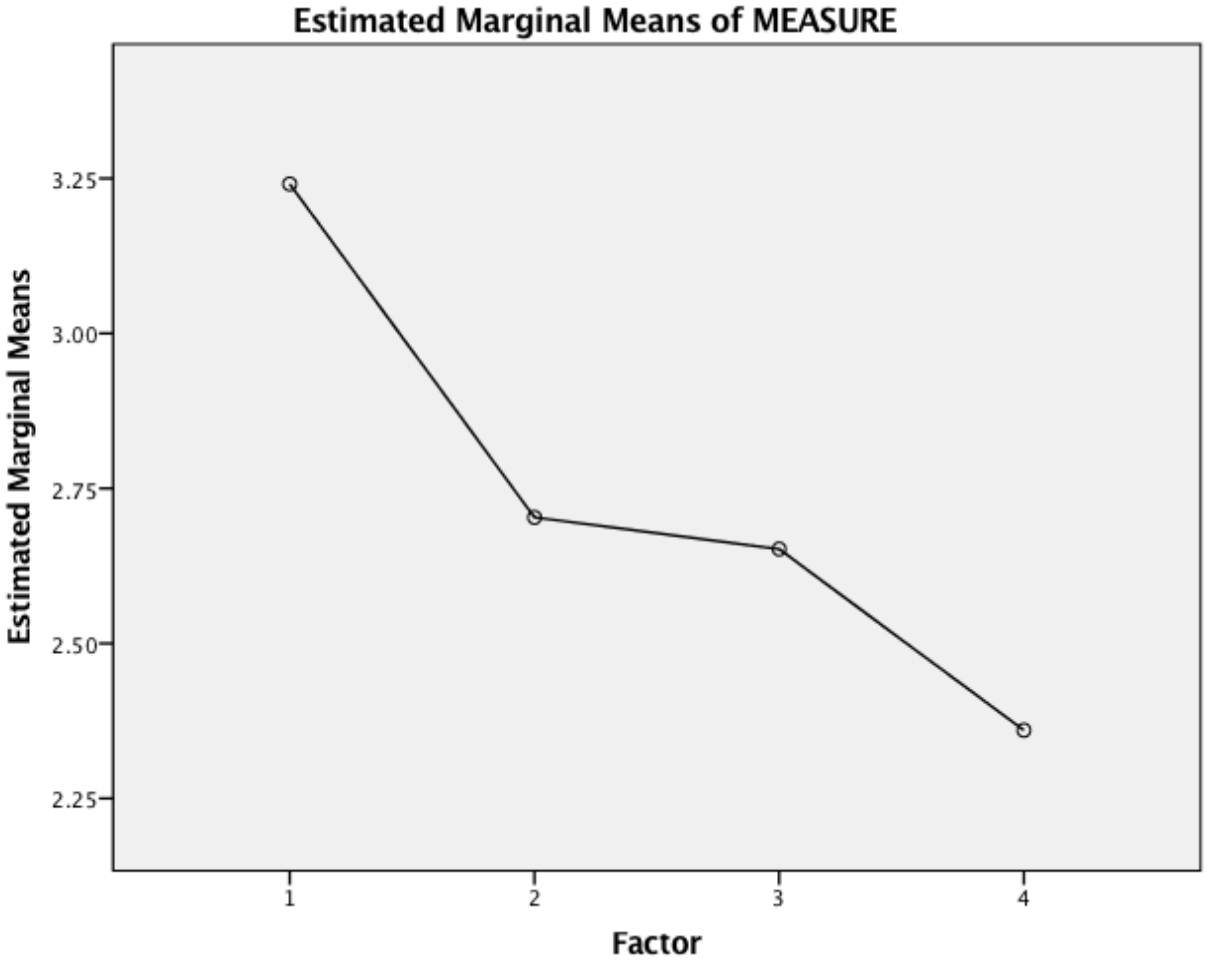
Source		Type III Sum of Squares	df	Mean Square	F	Sig.
factor1	Sphericity Assumed	158.169	3	52.723	156.531	.000
	Greenhouse-Geisser	158.169	2.438	64.865	156.531	.000
	Huynh-Feldt	158.169	2.455	64.430	156.531	.000
	Lower-bound	158.169	1.000	158.169	156.531	.000
Error(factor1)	Sphericity Assumed	394.081	1170	.337		
	Greenhouse-Geisser	394.081	950.985	.414		
	Huynh-Feldt	394.081	957.409	.412		
	Lower-bound	394.081	390.000	1.010		

Depending on the results of tests of within-subject effects among the R2D2 categories in Table 34, there were significant differences between all categories of the R2D2 model on the amount of use of social media as a flipped classroom tool in Saudi universities. Except for the reflecting and displaying categories that there were very little differences between them. As presented in Table 34 and illustrated in Figure 18, the reading category had the most activities used by faculty members in Saudi universities through the use of social media as a flipped classroom, followed by the reflecting, displaying, and doing categories, respectively.

Table 34: Comparisons Among the R2D2 Categories.

(I) factor1	(J) factor1	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.538	.039	.000	.460	.615
	3	.589	.039	.000	.512	.666
	4	.881	.052	.000	.778	.984
2	1	-.538	.039	.000	-.615	-.460
	3	.051	.038	.179	-.024	.126
	4	.343	.044	.000	.257	.429
3	1	-.589	.039	.000	-.666	-.512
	2	-.051	.038	.179	-.126	.024
	4	.292	.034	.000	.226	.359
4	1	-.881	.052	.000	-.984	-.778
	2	-.343	.044	.000	-.429	-.257
	3	-.292	.034	.000	-.359	-.226

Figure 18: Comparisons Among the R2D2 Categories (Note: (1) Reading; (2), Reflecting; (3) Displaying; (4) Doing).



4.5.4 Results of Research Question 4: What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

Participants were asked about the factors which prevent or limit them in Saudi universities from using social media as a flipped classroom tool in their teaching practices. In this section, there were seven items. The data were collected and coded using a five-level Likert-Scale as follows: Strongly agree (5), Agree, (4), Neutral (3), Disagree (2), and Strongly disagree

(1). Table 35 and Figure 19 present factors which prevented or limited Saudi faculty's social media uses in flipped classrooms.

Table 35: Percentages for Factors Which Prevented or Limited Saudi Faculty's Social Media Uses in Flipped Classrooms.

	Items	*Percentages and Numbers of Participants' Responses*				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching.	14.8% n= 58	38.9% n= 152	18.2% n= 71	19.2% n= 75	9% n= 35
2.	The required time for preparing a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	20.2% n= 79	44.2% n= 173	18.7% n= 73	14.1% n= 55	2.8% n= 11
3.	Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	23.8% n= 93	39.1% n= 153	15.1% n= 59	17.4% n= 68	4.6% n= 18
4.	Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching.	12.3% n= 48	27.6% n= 108	23% n= 90	26.3% n= 103	10.7% n= 42
5.	Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to a flipped classroom by using of social media.	21.5% n= 84	33.2% n= 130	17.1% n= 67	20.7% n= 81	7.4% n= 29
6.	Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching.	12% n= 47	24% n= 94	15.6% n= 61	34.3% n= 134	14.1% n= 55
7.	The high cost of technological tools used in a flipped classroom prevents or limits me from adopting social media as a flipped classroom tool.	11% n= 43	22.8% n= 89	24.6% n= 96	25.6% n= 100	16.1% n= 63

Figure 19. Percentages for Factors Which Prevented or Limited Saudi Faculty's Social Media Uses in Flipped Classrooms.

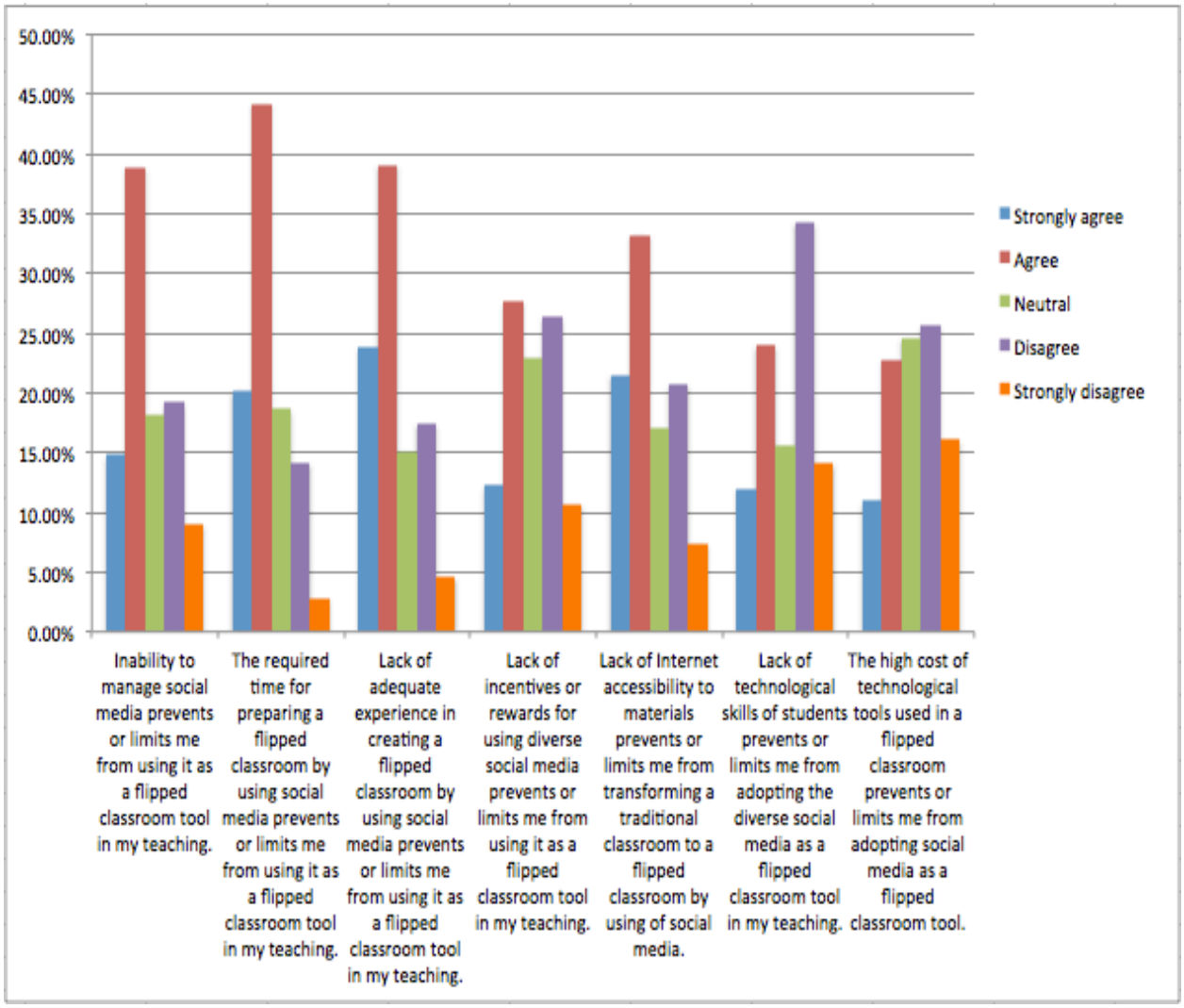


Table 36 presents the descriptive statistics for the factors which prevent or limit faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching practices through determining the mean, median, mode and standard deviation (SD) for all items related to the factors which prevent or limit them from using social media as a flipped classroom tool in their teaching.

Table 36: Descriptive Statistics for Factors Which Prevent or Limit Saudi Faculty's Social Media Uses in Flipped Classrooms.

	Items	*The descriptive statistics*			
		Mean	Median	Mode	SD
1.	Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching.	3.31	4	4	1.19
2.	The required time for preparing a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	3.65	4	4	1.04
3.	Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	3.60	4	4	1.15
4.	Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching.	3.04	3	4	1.20
5.	Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to a flipped classroom by using of social media.	3.41	4	4	1.23
6.	Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching.	2.86	3	2	1.26
7.	The high cost of technological tools used in a flipped classroom prevents or limits me from adopting social media as a flipped classroom tool.	2.87	3	2	1.24
	Average	3.25	3.57	3.43	1.18

Tables 35 and 36 and Figure 19 summarize factors which prevent or limit Saudi faculty's social media uses in flipped classrooms. The first item was *"Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching".* A large number of participants reported "Agree" (38.9%, n=152) and 14.8% of them (n= 58) reported "Strongly agree". Only a small number of participants indicated "Strongly disagree" (9%, n= 35), or "Disagree" (19.2%, n= 75), and 18.2% of them (n= 71) indicated "Neutral".

The second item was *"The required time for preparing a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching"*. A large number of participants reported "Agree" (44.2%, n= 173) and 20.2% (n= 79) of participants reported "Strongly agree". Only a small number of participants indicated "Strongly disagree" (2.8%, n= 11), or "Disagree" (14.1%, n= 55), and 18.7% of them (n= 73) indicated "Neutral".

The third item was *"Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching"*. A large number of participants reported "Agree" (39.1%, n= 153) and 23.8% (n= 93) of them reported "Strongly agree". Only a small number of participants indicated "Strongly disagree" (4.6%, n= 18), or "Disagree" (17.4%, n= 68), and 15.1% of them (n= 59) indicated "Neutral".

The fourth item was *"Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching"*. More than a quarter of the participants reported "Agree" (27.6%, n= 108) and 12.3% (n= 48) of them reported "Strongly agree". In contrast, more than a quarter of the participants reported "Disagree" (26.3%, n= 103) and 10.7% (n= 42) reported "Strongly disagree". 23% (n= 90) indicated "Neutral".

The fifth item was *"Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to a flipped classroom by using of social media"*. About third of participants reported "Agree" (33.2%, n= 130) and 21.5% of them (n= 84) reported "Strongly agree". A small number of participants indicated "Strongly disagree" (7.4%, n= 29) and 20.7% (n= 81) reported "Disagree". 17.1% of them (n= 67) indicated "Neutral".

The sixth item was *"Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching"*. A large number of

participants reported "Disagree" (34.3%, n= 134) and 14.1% of them (n= 55) reported "Strongly disagree". A small number of participants indicated "Strongly agree" (12%, n= 47) and 24% of them (n= 94) indicated "Agree", and 15.6% of them (n= 61) indicated "Neutral".

The seventh item was *"The high cost of technological tools used in a flipped classroom prevents or limits me from adopting social media as a flipped classroom tool"*. A large number of participants reported "Disagree" (25.6%, n= 100) and 16.1% of them (n= 63) reported "Strongly disagree". A small number of participants indicated "Strongly agree" (11%, n= 43) and 22.8% (n= 89) indicated "Agree", and 24.6% of them (n= 96) indicated "Neutral".

The descriptive statistics for the factors which prevent or limit faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching practices shows that "Agree" received the highest rating for the first five items. 44.2% (n= 173) of participants agreed that "The required time for preparing a flipped classroom by using social media prevents or limits them from using it as a flipped classroom tool in their teaching", followed by 39.1% (n= 153) who agreed that "Lack of adequate experience in creating a flipped classroom by using social media prevents or limits them from using it as a flipped classroom tool in their teaching", followed by 38.9% (n= 152) who agreed that "Inability to manage social media prevents or limits them from using it as a flipped classroom tool in their teaching", followed by 33.2% (n= 130) who agreed that "Lack of Internet accessibility to materials prevents or limits them from transforming a traditional classroom to a flipped classroom by using of social media", and followed by 27.6% (n= 108) who agreed that "Lack of incentives or rewards for using diverse social media prevents or limits them from using it as a flipped classroom tool in their teaching". Also, average of percentages of participants (55.12%) in these first five items indicates that responses of participants were between agree and strongly agree.

On the other hand, "Disagree" had the highest rating for the last two items. 34.3% (n= 134) of participants disagreed that " Lack of technological skills of students prevents or limits them from adopting the diverse social media as a flipped classroom tool in my teaching" and followed by 25.6% (n= 100) who disagreed that "the high cost of technological tools used in a flipped classroom prevents or limits them from adopting social media as a flipped classroom tool".

Based on these results, there are a number of factors that prevent or limit faculty members in Saudi Universities from adopting social media as a flipped classroom tool in their teaching. Some of these factors are related to faculty members, such as inability to manage social media, inadequate experience in creating a flipped classroom by using social media, and inability to manage time to employ new technological methods in teaching. Other factors related to Saudi universities which play a negative role in limiting faculty members in using social media as flipped classroom tools are lack of incentives or rewards that encourage faculty members to employ new technological methods in their teaching and not allowing students to access the Internet, especially on campus.

On the other hand, the technological skills of students and cost of technological tools did not hinder faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching. This is consistent with many interviewees' opinions who asserted that today's students have more technological skills than the teachers.

The interviewees were asked to identify the factors that prevented them or prevented other faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching practices. Also, they were asked to determine the effect of universities, faculty members or students on the use of social media as a flipped classroom in Saudi universities and

what the motivators were believed that they play a significant role in encouraging faculty members in Saudi universities to use social media as a flipped classroom in teaching practices. Table 37 presents factors which prevent or limit faculty members in Saudi universities from using social media as a flipped classroom tool depending on interviewees' responses.

Table 37: Factors Which Prevent or Limit Saudi Faculty's Social Media Uses in Flipped Classrooms Depending on Interviewees' Responses.

Factors	Interviewees							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Society's view towards the passive role of social media	X				X*			
2. Lack of experience on how to employ social media in educational purposes	X							X
3. The misperception about the flipped classroom so that is believed that flipped classroom eliminates the traditional classroom, it is a waste of time, or it can not be used in all disciplines.	X	X		X	X			
4. The reluctance of the faculty members to get rid of teaching by using traditional methods, and to employ technology and modern methods in their teaching practices.		X	X			X		
5. The successful flipped classroom needs a highly experienced teacher, and this may not be available in many faculty members.			X					
6. Students' inability to use social media as a flipped classroom tool				X				
7. Weak infrastructure in Saudi universities and the lack of the necessary resources (e.g. computers and access to the Internet, especially students) to employ modern educational methods		X	X**	X	X***		X	X
8. Some departments in Saudi universities are not convinced of the idea of distance learning					X		X	
9. Lack of workshops and training courses for faculty members about the use of technology in education	X							X

(X*) Interviewee asserted that many female students do not desire to participate in groups on social media (e.g. Twitter and Facebook), and this is due to some Saudi society's views towards the passive role of social media.

(X**) Interviewee reported that some faculty members in Saudi universities who use technologies in their teaching practices depend on their personal efforts to provide resources and equipment.

(X***) Interviewee mentioned that some colleges in Saudi universities provide the Internet for faculty members and staffs but not allow students to access the university's Internet.

Depending on the results of the interviews, there are a number of factors preventing or limiting faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching practices. The majority of these factors focused on the weak infrastructure of Saudi universities and lack of necessary resources (e.g. computers and access to the Internet, especially for students), misperception about the role of flipped classroom, and reluctance of faculty members to stop teaching with traditional methods and to employ technology and modern methods in their teaching practices. These factors were rated consistently high in the descriptive statistics results of the survey in this study for factors that prevent or limit faculty members in Saudi universities in using social media as a flipped classroom tool, and that focused highly on the weakness of the role of universities and faculty members.

The interviewees were asked specifically about the role of universities, faculty members, or students in the use of social media as a flipped classroom in Saudi universities. Interviewee #1 reported that universities do not follow the application of technologies in teaching, and many faculty members do not want to stop using traditional methods of teaching at a time when students are able to use technology, especially social media. Interviewee #2 mentioned that there

is no actual role for universities and faculty members to apply technological methods in education. Ultimately students are victims of this neglect because they are happy to use technology and have the ability to work with it. Interviewee #3 agreed highly with the previous two views. He reported that research provided at Saudi universities about the importance of technology is for the purpose of scientific promotions only and not used in the development of education at present. He stated that students currently do not constitute a barrier to the use of technology, but if the technologies are offered students will take advantage of using them. Also, interviewee #4 stated that Saudi universities are trying to encourage faculty members to employ technologies but protocol does not reach implementation. Only a few faculty members want to employ technologies in their teaching practices while many think technology is a waste of time. He asserted that students do not mind the use of technology, especially if the technology used is easy and attractive.

Similarly, female interviewees' views did not differ from male interviewees' views about the role of universities, faculty members, or students on the use of social media as a flipped classroom in Saudi universities. Interviewees #5 asserted that there is no role for Saudi universities or faculty members to develop the technological methods in education, and there is no cooperation between colleges or departments to exchange experiences and upgrade the educational process by using technology. Regarding the role of the student, she mentioned that students are more skilled at using technology, but perhaps there is a reluctance in some students to communicate with a faculty member outside the classroom, especially if it is general technology, such as Twitter, and this may be due to social customs and their view about the negative role of social media. She confirmed that these customs are now on their way to extinction. Interviewee #6 stressed that the role of universities and faculty members is weak in

the use of social media, especially in Saudi government universities, but in electronic universities there is a definite role because distance education and e-learning are activated. Also, she reported that students probably do not constitute a hindrance in the use of social media as flipped classroom in teaching practices. Interviewee #7 asserted that if the student finds an effective teacher and an active learning environment, the students will interact and produce creative ideas in learning. Unfortunately this situation is not widely available in Saudi universities now. In addition, blaming the student is to evade responsibility. Interviewee #8 was not different from the other interviewees in emphasizing the reluctance of universities and some faculty members to stop using traditional teaching methods and their belief that technology, especially social media, does not suit all disciplines. She did not believe that students would have a negative impact on employing social media as a flipped classroom tool.

Furthermore, the interviewees were asked about the motivations that may encourage faculty members in Saudi universities to use social media as a flipped classroom in teaching practices. The following is a list of interviewees' suggestions to motivate faculty members to use social media as a flipped classroom in teaching practices.

- Adopting modern educational methods and technologies in Saudi universities as a development project (interviewee # 3)
- Conducting training courses and workshops to clarify some of the effective ways in which technologies are used, especially social media (interviewees #1,2,3,4,6 &7)
- Providing the students and faculty members with the necessary equipment and allowing students access to the Internet on campus (interviewees #4,5 &8)

- Establishing an award at the university level or at the college level for faculty members who use technologies or social media as modern educational strategies (interviewees #2,3,5 &7)
- Providing faculty members the opportunity to attend conferences and symposiums that discuss the application of technology and the means of social communication in education and paying the related costs (interviewee #7)
- Creating a collaborative learning environment within the classroom and building a strong relationship between students and faculty outside the classroom (interviewee #7)
- Financial motivation: Although many faculty members were not too keen on the idea of financial motives, they mentioned that there was a financial reward for faculty members in Saudi universities called " Computer reward", equal 20% of the base salary of the faculty member. This reward had somewhat encouraged faculty members to use technology in their teaching, but when this bonus was stopped, some faculty members including those who had been using it before no longer used technology in their teaching (interviewee #3,4 &5).

Table 38 presents T-test in order to test significant differences between two independent groups—male-female regarding factors preventing or limiting Saudi faculty's social media uses in flipped classrooms.

Table 38: T-test Presents Differences between Male and Female Regarding Factors Preventing or Limiting Saudi Faculty's Social Media Uses in Flipped Classrooms.

Items	t-test	Sig. (2-tailed)
1. Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching.	.793	.428
2. The required time for preparing the flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	1.042	.298

3. Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching.	.995	.320
4. Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching.	1.033	.302
5. Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to a flipped classroom by using of social media.	.414	.679
6. Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching.	1.397	.163
7. The high cost of technological tools used in the flipped classroom prevents or limits me from adopting social media as a flipped classroom tool.	1.786	.075

Note: df (389)

As presented in Table 38, there were no significant differences between males and females in factors that preventing or limiting the use of social media in flipped classroom. This in turn supports the results of descriptive statistics and interviews that reported no significant differences between male and female faculty members in Saudi universities in preventing or limiting their uses of social media in the flipped classroom.

CHAPTER 5: DISCUSSION AND CONCLUSION

The main goal of this study was to investigate the extent to which the faculty members in Saudi University have ability to use social media as flipped classroom tools in their teaching practices. Mixed-method research was employed in this study through use of a questionnaire as a quantitative method gives a broad view of the findings, in addition to interview protocol as the qualitative method in order to reach deeper understanding about research questions. The study was planned to not confine or bias to specific strata of faculty members. Therefore, the study was applied to both male and female faculty members in Saudi universities. Also, the study included faculty members who are working during the period of this study in one of the Saudi universities, as well as Saudi faculty members who are currently completing their studies overseas and who are affiliated with Saudi universities as instructors or teaching assistants. 391 faculty members from 28 Saudi universities (Saudi government-sponsored universities) participated in the questionnaire, as well as 8 faculty members participated in the interview. The study included four main research questions, and this what will be discussed in the following section.

1. What are faculty members' experiences in using social media in teaching in Saudi universities?

2. What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

3. How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?

4. What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

5.1 Discussion of Major Findings

5.1.1 Discussion on Research Question 1: What are faculty members' experiences in using social media in teaching in Saudi universities?

Tables 16 &17 in the fourth chapter present percentage and descriptive statistics for faculty members' experiences in using social media in teaching. It is clear that faculty members in Saudi universities know and own some experiences to use social media in their teaching, specifically, the most their experiences focus on directing students to share experience with each other through social media, using social media as a resource for exchanging knowledge with their students, and showing their personal research interests through a public profile on social media. The interviews supported faculty members' experiences in use social media for directing students to share experience with each other and a resource for exchanging knowledge with their students through a number of social media apps that used such as Twitter, Snapchat, WhatsApp, Facebook, Blackboard, and Telegram. On the other hand, showing their personal research interests through a public profile on social media was the highest percentage (17.9%) with "*Always*" and (27.9%) with "*Often*". This may indicate that faculty members' experiences in Saudi universities may not be used mainly in teaching practices but were used merely to show their personal research interests through a public profile on social media. Also, the use of social media (e.g. Twitter, Facebook, Instagram) in communication with my students got a moderate percentage (17.9%) with "*Always*" and (21.7%) with "Often", although it was expected to be one of the most common uses because of its ease and its spread at the current time. It may return to

several reasons, according to Keller, "three key issues are surfacing regarding the role social media now plays in people's communication styles, First, when we communicate through social media, we tend to trust the people on the other end of the communication... Second, our social connections are not strengthened as much through social media as they are face-to-face... Last, we tend to follow and interact with people who agree with our points of view..." (2013. p.10). Through the interviews, it may be clear that distrust of Saudi students, especially female students in communication through social media, and this is due to some community customs and traditions. Interviewee# 5 mentioned " *the customs and traditions in Saudi society have prevented me from applying more social media because many students do not want to participate in a group that may be general- She also mentioned- that these habits may have been few in recent years, but they still exist and we are working hard to overcome them".* Also, online learning and distance learning are not accredited in Saudi universities, so Saudi students may prefer communication through face-to-face. In addition, the Saudi students as other people have freedom to follow and interact with people who agree with our points of view, and this is not possible to be imposed Saudi students to follow their professors on social media.

Asking students to submit assignments through social media (e.g. Twitter, Facebook, Instagram) got the highest percentage (49.6%) with "*Never*" and the lowest percentage (6.1%) with "*Always*" although some interviewees asserted that they used blackboard for submitting some assignments and discussions related to course. I think that confining this variable with limited apps (e.g. Twitter, Facebook, Instagram) may be one of the reasons that made it get the lowest average. Also, the use of social media to reach conferences or other classrooms got a highest percentage (25.32%) with "*Never*", and this may be due to some reasons mentioned by Interviewee#5 "I have not used social media to reach conferences because of the lack of

scientific conferences supported by Saudi universities; there is only one university or two universities to hold some conferences, although they are not held annually. I also cannot direct students to international conferences because the language barrier may prevent many students to share or attend the conference."

Kruskal-Wallis H Test was used to test the significant differences between academic ranks (professor, associate professors, assistant professors, instructors, and teaching assistant) in the quantitative data (the survey) regarding to faculty members' experiences in using social media in teaching in Saudi universities. Table 19 in the fourth chapter presents the results of these differences. There were significant differences between academic ranks in a number of dependent varables related to faculty members' experiences in using social media in teaching: I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students; I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram); I direct my students to share experiences with each other through social media; I use social media as a resource for exchanging knowledge with my students; I show my personal research interests through a public profile on social media. It should be mentioned here that there was difference in percentage of participants' academic ranks. One hundred and thirty-three (34%) of participants were instructor, one hundred twenty (30.7%) of the participants were assistant professors, seventy-five (19.2%) of the participants were teaching assistants, forty-two (10.7%) of the participants were associate professors, and twenty-one (5.4%) of the participants mentioned were full professors, as presented in Table 14 in the fourth chapter. Also, should be noted here that teaching assistant was the lowest academic rank in the majority of items regarding using social media in teaching in Saudi universities with Mean Rank (177.71, 174.98, 174.42, 172.98, and181.33) as presented in table (19 a). This may be due to majority of teaching assistants are

newly graduated and do not have sufficient experience in the teaching profession and the use of technological methods in the process of education.

There are many studies that discussed the impact of gender differences in the use of social media and technologies in learning and teaching as discussed in the literature review in this study. Some these studies found females have more ability than men in studying, communicating, and collaborating with each other through use of social networks (Kim & Yoo, 2016), and others asserted that men have more ability to learn and practice technology from their own experience (Zhou & Xu, 2007). In contrast, other studies asserted that there were not significant differences between males and females in the use of Internet for instructional purposes (Anduwa-Ogiegbaen & Isah, 2005). Mann-Whitney U Test was used in this study to test significant differences between two independent groups—male-female regarding faculty members' experiences in using social media in teaching. The results indicate that there were no significant differences between males and females regarding faculty members' experiences in using social media in teaching. Also, the interviews supported the results of descriptive statistics through found in a number of social media apps used by faculty members from both genders in instructional purposes (See Table 18, Chapter 4).

Overall, the faculty members (of both genders) in Saudi universities have some experiences in using social media in teaching. Also, there are some obstacles that may limit faculty members in Saudi universities to use social media in teaching such as the community's negative attitude towards social media and lack of online activities supported by Arabic language such as conferences that can be reached by the use of social media.

5.1.2 Discussion on Research Question 2: What are faculty members' attitudes towards using social media in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

The findings, as presented in Tables 21 & 22 in the fourth chapter show that faculty members in Saudi universities have positive attitudes towards using social media in flipped classrooms. The overall median for all items of faculty members' attitudes towards using social media in flipped classrooms was (4), as well as all interviews indicated to faculty members' positive attitudes toward using social media in flipped classroom. The interviewees expressed their points of view about the role of using social media as a flipped classroom tool, and all their points of view as discussed in the fourth chapter predict their full awareness towards employing social media as a flipped classroom tool. Furthermore, the interviewees suggested some ways in which the use of social media as a flipped classroom play an important role in enhancing the educational process such as, creating a partnership between universities or colleges in order to involve students from different places, link the courses in Saudi universities with the labor market through employing social media to convey what is happening in the real world of engineering and industrial factories.

What should be mentioned here are that a number of participants in this study, whether through survey or interview (the researcher received a number of responses by e-mail and LinkedIn) showed their admiration for the idea of using social media as a flipped classroom tool. Many of them said they had not used it before but seemed eager to use it in the future. They also called for courses not just to train them to use technology but to learn some educational strategies that could be implemented using technology.

Mann-Whitney U Test was used to test differences between two independent groups (less experienced faculty members and more experienced faculty members) in Saudi universities towards using social media as a flipped classroom in the teaching process. The findings in Table 23 showed that there were no significant differences between less experienced faculty members and more experienced faculty members regarding their attitudes towards using social media as a flipped classroom. Also, Mann-Whitney U Test was used to test significant differences between two independent groups—male-female regarding faculty members' attitudes towards using social media in flipped classrooms. As in Table 24, the findings also showed that there were no significant differences between males and females regarding their attitudes towards using social media as a flipped classroom. This result is consistent with another study carried out by Aifan (2015) at King Abdul-Aziz University, Saudi Arabia, and that asserted that there were no differences between male and female Saudi students' attitudes toward using social media in order to support their learning.

Overall, the faculty members in Saudi universities with differences in their teaching experiences and gender have positive attitudes towards using social media as a flipped classroom tool. In addition, these attitudes were not affected by the difference of faculty members' majors. As seen in Tables 15, there were the differences in majors of interviewees (e.g. Human Studies, Education, Evaluation and research, Science, Arabic Language, etc.); nevertheless faculty members' attitudes towards using social media as a flipped classroom tool have not changed.

5.1.3 Discussion on Research Question 3: How do faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework?

Bonk and Zhang's R2D2 model (reading, reflecting, displaying, and doing) was adopted in this study in order to reveal how faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework. Activities of the reading category in the survey focus on acquisition and exploration of knowledge through reading and listening, and address verbal and auditory learners while activities of the reflecting category in the survey focus on observing and reflecting, and address observational and reflective learners. Also, activities of displaying category in the survey address visual learners through providing videos; online conferences; virtual field trips; or pictures, while activities of doing category in the survey address hands-on and kinesthetic learners.

The findings, as presented in Tables 25-32 in the fourth chapter, show that there were differences in how faculty members use social media as a flipped classroom tool to address students' learning preferences per the R2D2 model. Also, the descriptive statistics for categories of R2D2 model (as presented in tables 26,28,30 &32) show that reading category was largest categories used with (Median=3.5), then followed by reflecting category with (Median=2.75), and displaying with (Median=2.75), and then followed by doing category with (Median=2.25).

Furthermore, one Way repeated measures ANOVA was used to test significant differences between categories of R2D2 model. The findings were consistent with descriptive statistics. The findings asserted that there was a large difference between reading category and other categories, while the difference between reflecting category and displaying category was small. The doing category was the smallest category that was used by the faculty members through employing social media as a flipped classroom tool.

In addition, it should be mentioned here that "Never" were the highest rating for all items of doing categories, and for three items of reflecting category and displaying categories. On the other hand, "Often" was the highest rating for all items of the reading category. This indicates that the most activities, which used by faculty members in Saudi universities through employing media as a flipped classroom tool to address students' learning preferences, focused largely on reading category, then followed by the reflecting category and the displaying category, and last the doing category. This means that the use social media as a flipped classroom tool in Saudi universities address largely verbal and auditory students. Furthermore, each category of the R2D2 has twenty-five activities as designed by Bonk and Zhang (2008) in their book *Empowering Online Learning: 100+ Activities For Reading, Reflecting, Displaying, and Doing*, but activities in each category may be used in one or more of these categories. Also, there are many elements related to the instructor, course developer, and moderator that should be taken into account when choosing online learning activities, such as time, cost, and risk, as well as the ages and abilities of learners to use these activities. I think these differences among activities of categories of the R2D2 model used in this study are based on conditions such as time, cost, and abilities of learners or instructors to use or design these activities. For example, in the displaying category, "Providing students with figures or charts related to the content of the lecture" is not similar in its ease to "Creating virtual field trips corresponding to the content of the lecture and asking students to view them" which needs more experience, and that may not be exist in faculty members in Saudi universities as will be discussed in the fourth question.

5.1.4 Discussion on Research Question 4: What factors prevent or limit Saudi faculty's social media uses in flipped classrooms? Are there any differences between male and female faculty members in Saudi universities in this regard? If so, what are such differences?

The findings, as presented in Tables 35 & 36 in the fourth chapter, show that there were a number of factors which prevented or limited faculty members in Saudi universities from using social media as a flipped classroom tool. The survey provided a number of factors that may prevent or limit faculty members in Saudi universities to use social media as a flipped classroom. The finding of descriptive statistics in Table 36 shows that the first five factors (inability to manage social media as a flipped classroom tool, the required time for preparing a flipped classroom by using social media, lack of adequate experience in creating a flipped classroom by using social media, lack of incentives or rewards for using diverse social media prevents, lack of Internet accessibility to materials) had a higher percentage "Agree" and lowest percentage with "Strongly disagree" (38.9% & 9%, 44.2% & 2.8%, 39.1% & 4.6&, 27.6% & 10.7%, and 33.2% &7.4%, respectively). This indicates that the majority of participants in this study agree that these factors were major reasons to prevent or limit them from using social media as a flipped classroom tool. The interviews, were conducted in this study, reinforced a lot of these elements. For example, interviewee #2 stressed that faculty members in Saudi universities were not trained in the use of social media for educational purposes and were not given more information about some educational strategies such as the flipped classroom. Also, the majority of interviewees agreed that weak infrastructure in Saudi universities and lack of necessary resources (e.g. computers and access to the Internet, especially for students) were important barriers for many faculty members in using social media as a flipped classroom. Interviewee #2 reported that some faculty members in Saudi universities who use technologies in their teaching practices depend on

their personal efforts to provide resources and equipment. This view was consistent with Interviewee #5's point of view that asserted that some colleges in Saudi universities provide the Internet for faculty members and staff and not allow students to access the university's Internet. Moreover, although that lack of incentives or rewards was one of more factors that prevented or limited faculty members to use social media as a flipped classroom tool depending on descriptive statistics of survey, many interviewees were not keen incentives or rewards, specifically financial motives. They justified that these incentives may be a hindrance if they are stopped. For example, they mentioned that there was a financial reward spent to faculty members in Saudi universities called " Computer reward". It was equal to 20% of the base salary of the faculty member. This reward somewhat encouraged faculty members to use technology in their education, but when this bonus was stopped, some faculty members including members who had been using it before the reward no longer use technology in their education. These findings are consistent with other studies discussed in the literature review of this study, and that asserted there are some challenges that may hinder the adoption of flipped classroom by the use of technology. These challenges were attributed to reasons, such as lack of student motivation to adapt to this type of learning (Greener, 2015; Aboraya & Alket, 2016), or a lack of facilities and Internet accessibility (Davies, Dean and Ball, 2013).

On the other hand, the last two factors in Table 36 (lack of technological skills of students and the high cost of technological tools) had a higher percentage with "Disagree" and the lowest percentage with "Strongly agree" (34.3% &12%, and 25.6% &11%, respectively). This means that the majority of participants disagreed on these two factors. Many interviewees asserted that today's students may have more technological skills than the teachers, and students do not mind the use of technology, especially if the technology used is easy and attractive. Also,

the high cost of technological tools did not constitute a big obstacle to faculty members to use social media as a flipped classroom tool, and this may be because many social media are free.

What should be mentioned here is that factors which prevented or limited faculty members in Saudi universities to use social media as a flipped classroom were not confined to the reasons discussed earlier. Other reasons played an important role in this, too. For example, although lack of technological skills of students did not constitute a big obstacle in front of faculty members to use social media as a flipped classroom, society's view towards the passive role of social media was one of reasons that prevents or limits that. Interviewee#5 asserted that many female students do not desire to participate in groups on social media (e.g. Twitter and Facebook), and this returns to some Saudi society's views towards the passive role of social media. The reluctance of the faculty members to get rid of teaching by using traditional methods, lack of workshops and training courses for faculty members on the use of technology in education, and the misperception about the flipped classroom so that it is believed that the flipped classroom eliminates the traditional classroom and is a waste of time, all these were also obstacles to prevent or limit the faculty members to use social media as a flipped classroom tool. Moreover, the interviews discussed the effect of universities, faculty members, or students on the use of social media as a flipped classroom in Saudi universities, and the goal of this was to reach a deeper understanding of factors that prevent or limit using social media as a flipped classroom tool, as well as the role of universities and faculty members and students in creating such obstacles. The findings were consistent with descriptive statistics; Saudi universities were lacking infrastructure that encourages faculty members and students to use technologies for instructional purposes. Also, many faculty members do not want to get rid of traditional methods of education at a time when students are able to use technology, especially social media.

Although there were some reasons related to students, such as their reluctance to communicate with a faculty member outside the lecture due to social customs and their view about the negative role of social media, the students were victims of the shortcomings of universities and faculty members on the one hand and the customs and traditions of society on the other.

T-test was used to test significant differences between two independent groups—male-female regarding to factors prevent or limit Saudi faculty's social media uses in flipped classrooms. The findings as presented in Table 38 and interviewees' responses did not indicate that significant differences exist between males and females in this regard. The findings show that both male and female faculty members in Saudi universities face the same obstacles that prevent or limit the use of social media as a flipped classroom tool.

In addition, the interviewees were asked to determine some motivations might encourage faculty members in Saudi universities to use social media as a flipped classroom in teaching practices. As presented in fourth chapter, most of their proposals, if not all, focused on the role of universities and what should be provided to faculty members and students in order to adopt technology and educational strategies for educational purposes.

Eventually, through review of faculty members' experiences in using social media in teaching, their attitudes towards using social media in flipped classrooms, as well as their abilities in use social media as a flipped classroom tool to address students' learning preferences, and factors prevent or limit them to use social media in flipped classrooms; we can conclude that the faculty members have a positive attitude toward using social media as a flipped classroom at the time in which many of the barriers associated with Saudi universities and students in addition to factors associated with them may be a barrier in front of them to use social media in their teaching in general or through employing it as a flipped classroom tool.

5.2 Limitations of the Study

There are a number of limitations in this study. These limitations related to sample, statistical distribution of data, gathering instrument of data, the survey design issues .The following section will discuss these limitations with more details.

Sample. There are a number of limitations related to sample. For example, was planned in this study to use One Way ANOVA to test significant differences between less experienced and more experienced faculty members in Saudi universities towards using social media as a flipped classroom in the teaching process. This means that participants' years of teaching experience in higher education should be classified within three or more groups. Majority of participants (n=200 out of 391) had teaching experiences between 1 and 6 years while the rest of the participants (n=191 out of 391) had teaching experiences between 7 and 32 years. This is what led the researcher to divide participants into two groups (less experienced faculty members were from one to 6 years and more experienced faculty members were from 7 to 32 years). This in turn forced the researcher to substitute One Way ANOVA to test with Mann-Whitney U Test.

Also, the study was planned for a number of participants from different academic majors in order to get a comprehensive view about faculty members' attitudes towards using social media as a flipped classroom tool, so there were a number of participants in the interviews from different academic majors including Human Studies, Education, Evaluation and research, Educational Technology, Management, Science, and Arabic Language.

Statistical distribution of data: It was planned in this study that parametric tests were used so that t-test would test significant differences between two groups while One Way ANOVA test would be used to test significant differences among three groups or more. Because homogeneity and normality were not met in the data of questions one and two, nonparametric

tests were used in this study instead of the parametric tests. The dependent variables in those two questions were ordinal. Thus, Kruskal-Wallis H Test was used instead of One Way ANOVA test, and Mann-Whitney U Test was used instead of t-test.

Gathering instrument of data: Each category of the R2D2 has twenty-five activities as designed by Bonk and Zhang (2008) in their book titled" Empowering Online Learning: 100+ Activities For Reading, Reflecting, Displaying, and Doing". In the survey instrument of this study, 16 learning activities were selected so that four learning activities were selected from each category of the R2D2 model (reading, reflecting, displaying, and doing). The selected learning activities in this study were chosen randomly by taking into account some elements related to choosing online learning activities such as time, cost, and risk as well as the ages and abilities of learners to use these activities.

The survey design issues: The survey was presented to participants in both Arabic and English. English was the default language in which the survey was designed by using the Qualtrics survey website, and then the survey in Arabic as a second language was designed. This means that once the link is clicked, the survey will move to the default language (English). Although the cover letter for survey recruitment was included with the notice that told participants that the survey was available in both Arabic and English, and they could choose their preferred language to participate in this survey, many of responses of participants in the survey (approximately 100 response) were submitted blank without answering any questions. The researcher received many emails for the survey in Arabic. The researcher added some details on the cover letter for survey recruitment in order to show the participant how to change the language of the questionnaire; for example, "through the icon in the upper right corner of the front page, you can choose your preferred language". Although the required sample size of this

study was achieved, there were a large number of responses lost and that may play an important role in giving a clearer picture of the results of the study.

Spatial Limits: The study is limited to faculty members in 28 Saudi universities (Saudi government-sponsored universities), so generalization of findings is limited to faculty members in Saudi government-sponsored universities and do not include faculty members in the Saudi electronic universities.

5.3 Implications

The study findings have many implications related to a number of different stakeholders such as decision makers and universities administrators; faculty members and learners; as well as the field of instructional design and technology. Further discussion of these implications is in the following paragraphs.

Implications for decision makers and universities administrators

The findings from this study provide decision makers and universities administrators in Saudi universities with the following suggestions and recommendations supported by statistical results as discussed in the fourth chapter in order to use social media for instructional purposes through applying some educational strategies as flipped classroom. These suggestions and recommendations might also direct Saudi universities to restore their missions and visions and to stay in line with the current technological development.

- Decision makers and universities administrators should encourage colleges and departments to hold training courses and workshops to clarify some of the effective ways in which technologies can be used, especially social media for instructional purposes and providing them with all supplies which are requested for these training courses

- The reluctance of some students to communicate with a faculty member outside the lecture, especially if it is a general technology tool such as Twitter, because of social customs and their view that the negative role of social media constitutes an obstacle in front of faculty members to use social media as a flipped classroom tool. Universities should feel safe society and parents about employing social media for educational purposes and helping the society and parents overcome their negative attitudes toward social media. Saudi universities should benefit from the experiences of developed countries. For example, at the beginning of the semester, U.S schools provide parents with a letter that includes guidelines for students to use new technologies in a meaningful, safe, and responsible way. This letter also includes some principles that must be embraced by the students to use new technologies for instructional purposes (resource: Southgate Community School District, SCSD Acceptable Use Policy for Students, 2017).
- The majority of interviewees in this study reported that weak infrastructure in Saudi universities and the lack of the necessary resources (e.g. computers and access to the Internet, especially students) to employ modern educational methods constituted a big obstacle in front of them to use social media as a flipped classroom tool. Therefore, decision makers and universities administrators should strive to develop strong infrastructure in Saudi universities. The faculty members and students should be provided with all technologies needed. Also they should be allowed to access the Internet for free all over campus.
- The incentives or rewards for using diverse social media for instructional purposes play a significant role in encouraging faculty members to employ social media as a flipped classroom tool. It is not necessary to be motivated financially. The decision makers and

university administrators should identify some incentives that could improve of faculty members' experiences and the educational process in Saudi universities such as giving an award at the end of the semester to the faculty member to best use modern technological tools in teaching practices, and giving priority to the advantages offered by universities to faculty members who employ technology in education.

Implications for faculty members and learners

Learners differ in their preferences for learning. For example, visual learners like to learn through pictures and symbolic tools, while reading/writing learners prefer to learn printed word and text, adding that listening is desire of auditory learners, and learning through experience and practice is way preferred by kinesthetic, tactile, or exploratory learners (Othman & Amiruddin, 2010). Under the current technological development, students' learning preferences should be taken into consideration because "the key goal of education is to help all learners learn" (Zhang& Bonk, 2008). Faculty members should have an ability to employ modern technologies and educational strategies that take into account students' learning preferences and desires. According to Bloom (1976), "the basic task in education is to find strategies which will take individual differences into consideration but which, will do so in such a way as to promote the fullest development of the individual" (p.3). This study addressed the use of social media as the strategy of flipped classroom that focuses on the effectiveness of learning through students' positive participation and exploiting class time efficiently in collaborative activities among students and their teacher, as well as the researcher in this study which adopted Bonk and Zhang's R2D2 framework. This in turns help the faculty members and trainers in choosing diverse learning activities with appropriate technologies for creating effective online learning environments.

Implications for instructional design and technology

Education technology through its focus on facilitating learning mainly aims to help people learn (Januszewski & Molenda, 2008, p.15). Constructivist design theory is one of the theories most adopted in facilitating education, especially through design of online learning. Exploration of multiple perspectives is one of main principles of constructivist theory. Thus, "learners should not be passive and simply receive, memorize, and recall information; instead they should be active by thinking, analyzing, understanding, and applying information" (Richey, Klein, & Tracey, 2011, p.131). This study adopted Bonk and Zhang's R2D2 Model to facilitate choosing diverse learning activities with appropriate technologies for creating effective online learning environments. The activities in Bonk and Zhang's R2D2 Model were categorized into four categories: reading, reflecting, displaying, and doing. Therefore, adopting this Model plays a significant role in taking into account students' diverse learning preferences and facilitating learning for all. The study also adopted social media as a flipped classroom tool by providing learners access to pre-lecture online materials including some content of the lecture and exploiting class time in more interactive and higher-order activities such as discussions, problem solving, analyzing, and synthesizing. This in turn leads to creating collaborative learning environment in which " the educational context is collaborative, the social context is the group, and the technological context is a computer-mediated setting" (Kirschner, Strijbos, Krejins, & Beers, 2004, p.50). All these indicate that the notion of this study depends largely the constructivist theory viewpoint through applying computer-supported collaborative learning environments and social network learning communities.

On the other hand, social media have an important role in enhancing education and overcoming temporal and spatial restrictions on learning. Therefore, specialists in the field of

educational technology and designers should not limit their research to the mere integration of social media in education. For example, using Twitter to share news and public information is not an important part of the teaching practices, even if it is communication between a faculty member and students. This means that social media should be adopted as a real tool in practice teaching. In addition, the findings in this study reported that parents' concerns and negative attitude towards the passive role of social media prevented or limited the use of social media as flipped classroom tools in Saudi universities. This means that ethical practice and community culture must be taken into account during the use of social media for instructional purposes. Januszewski and Molenda (2008) asserted, "contemporary ethics oblige educational technologists to consider their learners, the environments for learning and the needs and the "good" of society as they develop their practices" (p.3).

5.4 Recommendations for Future Research

Given the results of this study, there are a number of recommendations to be considered for future research.

1. The study focused on investigating faculty members' experiences about using social media as a flipped classroom tool. Many participants in this study seemed to admire employing social media as flipped classroom tool although they had not used it in their teaching practices. Also, the findings asserted that lack of training prevented or limited faculty members in Saudi universities to use social media in flipped classrooms. Future studies should focus on experimental studies that discuss employing social media as a flipped classroom tool and the ability of teachers and students to use them properly and benefit from them.

2. The study was conducted on faculty members in Saudi government-sponsored universities and did not include faculty members in the Saudi electronic universities. The findings of the study reported that there are a number of factors which prevented or limited faculty members' use of social media as a flipped classroom tool, related to lack of Internet accessibility and lack of technological skills. These factors may not exist at Saudi electronic universities. Thus, future studies should replicate this study at Saudi electronic universities and compare findings.
3. The study explored faculty members' experiences in using social media in teaching practices. Although the interviews with eight participants discussed the types of social media used in teaching, they did not give a comprehensive perception about the types of social media used for instructional purposes in Saudi universities compared to the results that could be obtained in the case of the use of open-ended questions within the questionnaire (n=391 as in this study). Future studies should add open-ended questions into the questionnaire in order to support the findings of interviews.
4. The study adopted Bonk and Zhang's R2D2 framework for online learning (Reading, Reflecting, Displaying, and Doing) in order to discuss how faculty members can use social media as a flipped classroom tool to address students' learning preferences. Each category of the R2D2 has twenty-five activities as designed by Bonk and Zhang (2008) in their book *Empowering Online Learning: 100+ Activities For Reading, Reflecting, Displaying, and Doing*. The researcher in this study selected four activities of each category depending on a number of elements related to choosing online learning activities such as time, cost, and risk, and as well as the ages and abilities of learners to use these activities. Future studies should replicate the study with other activities. Also, the findings of the study reported that

there were significant differences between categories of the R2D2 model in the amount of social media used as a flipped classroom tool in Saudi universities. The reading category was the activity most used by faculty members while the doing category was the lowest activity used. Future research should focus more on least used categories and create an effective learning environment that maximizes the benefits of these activities.

5. The researcher in this study asked questionnaire respondents to indicate within the instrument if they would like to volunteer to participate in an interview related to the study. At the end of the section of demographic information survey, there was the question "Would you like to volunteer to participate in a later online interview related to this study?" In fact, this helped the researcher recruits a number of interviewees although many participants thought that they should not complete the survey after this question in case their answers were "YES". The researcher contacted some participants who accepted to volunteer to participate in an interview, but they did not complete the survey after this question. They reported that they misunderstood the question about volunteering for an interviews and thought they did not need to respond to the rest of the survey. Therefore, future studies, especially regarding the recruitment of questionnaire respondents, should be the question about acceptances of questionnaire respondents to volunteer to participate in an interview at the end of the survey. This in turn ensures that the questionnaire is completed, and then participation in a related interview to this study is accepted or rejected.
6. There are many apps that may be classified under social media, such as Twitter, Facebook, Instagram, etc. Some items in the survey used specific examples without the use of "etc.". For example, "*I use social media (e.g. Twitter, Facebook, Instagram) in communication with my students"* and *"I ask my students to submit assignments through social media (e.g.*

Twitter, Facebook, Instagram)". The researcher thinks that these had a passive effect on participants' responses so that the participants who use WhatsApp in communication with their students may answer passively because WhatsApp is not included in the options and "etc." was not added so that the participant did not understand that the question included the applications mentioned and others that fell under social media apps. Future studies should take into account whether the question is limited to the applications mentioned or if it goes beyond to other applications by adding "etc."

5.5 Conclusion

The flipped classroom is one of the best instructional strategies that enhances education and increases the positive role of the learner during the educational process by providing students with the content before the lecture and allowing them to spend time during class on critiquing, applying, synthesizing, and discussing with their peers and with their teacher. Technologies play a significant role in implementing a flipped classroom. It is asserted by Bishop & Verleger's rejection (2013) that the flipped classroom strategy is not the mere assigning of reading outside of class and having discussions in class; rather, it consists of interactive group-learning activities inside the classroom for the delivered or directed content by the use of technologies outside the classroom.

Flipped classrooms are not confined to specific technological tools; but on the contrary, Blackboard, You Tube videos, LMS, Google Docs, Wikis, and blogs, Google hangout, etc. were used effectively in implementing the flipped classroom as discussed in detail in the literature review of this study. Therefore, the researcher in this study tried to investigate faculty members' experiences about using social media as a flipped classroom tool in Saudi universities. Moreover, students' learning preferences could be considered through employing the diversity of technology

tools and online platforms. This was what encouraged the researcher in this study to adopt Bonk and Zhang's R2D2 framework that was designed for the sake of helping instructors, moderators, and course developers to choose appropriate learning activities, depending on students' learning preferences.

This study focused on faculty members' experiences in using social media in teaching through exploring ways in which social media was used in teaching practices and which types of social media were used most. The findings of the study showed that faculty members in Saudi universities have some experiences in using social media in teaching, and the most of these uses were for the purposes of exchanging knowledge, response to students' questions, and creating groups to help students discuss with each other. Also, there were various types of social media used by the faculty members, such as Twitter, Snapchat, WhatsApp, Telegram, and Blackboard.

Further analyses were conducted to examine possible differences by various variables. For example, Kruskal-Wallis H Test was used to test the significant differences between five independent groups by participants professional ranking (i.e., professor, associate professors, assistant professors, instructors, and teaching assistant) regarding faculty members' experiences in using social media in teaching in Saudi universities. The results showed there were significant differences among the five independent groups (i.e. academic ranks). Mann-Whitney U Test was used to test significant differences between two independent groups—gender regarding faculty members' experiences in using social media in teaching. The results showed no significant differences between male and female in this regard. In addition, Mann-Whitney U Test was used to test differences between two independent groups (less experienced and more experienced faculty members) regarding their attitudes towards using social media as a flipped classroom. Also, it was used to test differences between male and female, and found no significant

differences. Moreover, one Way repeated measures ANOVA was used to test significant differences between categories of the R2D2 model of how faculty members use social media as a flipped classroom tool to address students' learning preferences per category of the R2D2 model. The results asserted there were significant differences between all categories of the R2D2 model on the amount of use of social media as a flipped classroom tool in Saudi universities. Also, t-test was used to test significant differences between two independent groups—male-female regarding factors preventing or limiting Saudi faculty's social media uses in flipped classrooms. The results showed no significant differences between male and female in this regard.

Although the study showed that faculty members have a positive tendency towards using social media in flipped classrooms, students' learning preferences did not receive faculty members' sufficient attention. Through discussing how faculty members use social media as a flipped classroom tool to address students' learning preferences per the Bonk and Zhang's R2D2 framework, the findings indicated that most activities focused largely on the reading category that addresses verbal and auditory students. This may be due to many factors that prevented or limited the faculty members from using social media as a flipped classroom tool. These factors related to universities (e.g. weak infrastructure and the lack of access to the Internet, and lack of workshops and training courses that help faculty members use technology in education), faculty members (e.g. the reluctance of getting rid of teaching by using traditional methods and employing technology and modern methods in teaching practices, and lack of experience), and students (e.g. students and society's view towards the passive role of social media).

APPENDIX A: SUMMARY OF ACTIVITIES FOR R2D2 MODEL

Summary of activities for R2D2 model, (Adopted with written permission) from: Bonk, C. J., & Zhang, K. (2008). *Empowering online learning: 100+ activities for reading, reflecting, displaying, and doing*. John Wiley & Sons, Inc. (p. 250-256).

Phase 1: Reading (Addressing Verbal and Auditory Learners)

Learning Activity	Risk	Time	Cost	Learner-Centeredness	Duration of Activity
1. Online Scavenger Hunt	Low	Medium	Low	Medium	1–2 weeks
2. Web Tours and Safaris	Medium	Medium	Medium	Medium	1 week as needed
3. WebQuests	Low	Medium	Low	Medium	1–4 weeks
4. Guided Readings	Low	Medium	Low	Medium	4–15 weeks
5. Discovery Readings	Medium	Low	Low	High	1–2 or 4–12 weeks
6. Foreign Language Reading Activities and Online News	Medium	Medium	Low	Medium	1–2 or 4–10 weeks
7. FAQ and Course Announcement Feedback	Low	Medium	Low	Medium	Weekly or as needed
8. Question-and-Answer Sessions with Instructor	Medium	Medium	Low	Medium	Weekly or as needed
9. Online Expert Chats	Medium	Medium	Low	Medium	1 week as needed
10. Online Synchronous Testing	Medium	High	Low	Low to High	Weekly or as needed
11. Synchronous or Virtual Classroom Instructor Presentations	Medium	Medium	High	Medium	Weekly or as needed
12. Online Webinars	Medium	Medium	High	Medium	Weekly as needed
13. Public Tutorials, Wizards, and Help Systems	Low	Low to High	Low to Medium	Medium	1 week as needed
14. Expert Lectures and Commentary	Low	High	Medium	Medium	Weekly as needed

15. Online Podcast Lectures or Podcast Shows	Medium	Medium	Medium	Medium	1–2 weeks
16. Audio Dramas	Medium	Medium	High	Medium	1–2 weeks as needed
17. Posting Video-Based Explanations and Demonstrations	Medium	Medium	High	Medium	Weekly as needed
18. Online Sound or Music Training	Low	Medium	Low	Medium	Weekly as needed
19. Online Literature Readings	Medium	Medium	Low	Medium	Weekly as needed
20. Online Poetry Readings	Medium	Medium	Low	Medium	Weekly as needed
21. Posting Webliographies or Web Resources	Medium	Medium	Low	High	2–4 weeks
22. Text Messaging Course Notes and Content	High	Medium	Medium	Medium	As needed
23. Text Messaging Course Reminders and Activities	Medium	Medium	Medium	Medium	As needed
24. Online Language Lessons	Medium	High	Low to high	Medium	As needed, perhaps for the entire course
25. E-Book and Wikibook Reports and Critiques	High	High	Low	High	4–8 weeks
Phase 2: Reflecting (Addressing Reflective and Observational Learners)					
26. Post Model Answers	Low	Low	Low	Medium	As needed
27. Reuse Chat Transcripts	Low	Medium	Low	Medium	1–2 weeks for each activity
28. Workplace, Internship, or Job Reflections	Medium	Medium	Low	Medium	4–15 weeks
29. Field and Lab Observations	Medium	Medium	Low	High	4–10 weeks
30. Self-Check Quizzes and Exams	Low	Medium to high	Low	Medium	As needed
31. Online Discussion Forums and Group Discussions	Medium	High	Low	High	10–15 weeks of course

APPENDIX A CONTD

Learning Activity	Risk	Time	Cost	Learner-Centeredness	Duration of Activity
32. Online Portal Explorations and Reflections	Medium	Medium	Low	Medium	As needed
33. Lurker, Browser, or Observer in Online Groups	Medium	Medium	Low	High	4–8 weeks
34. Podcast Tours	Medium	Medium	Low	Medium	1–2 weeks
35. Personal Blogs	Medium	High	Low	High	8–15 weeks
36. Collaborative or Team Blogs	Medium	High	Low	High	8–12 weeks
37. Online Resource Libraries	Medium	High	Low	High	1–2 weeks or 6–12 weeks
38. Social Networking Linkages	High	Medium	Low	High	1–3 weeks
39. Online Role Play Reflections	High	High	Low	High	1–2 weeks
40. Synchronous and Asynchronous Discussion Combinations	Medium	Medium	Low	High	1–2 weeks for each instance
41. Self-Check Reflection Activities	Low	Low	Low	Medium	As needed
42. Electronic Portfolios	Medium	High	Medium	High	12–15 weeks (entire course typically)
43. Individual Reflection Papers	Low	Medium to high	Low	High	As needed; perhaps 1–4 weeks for each writing activity
44. Team or Group Reflective Writing Tasks	Medium	High	Low	Medium	3–8 weeks
45. Super-Summaries, Portfolio Reflections, and Personal Philosophy Papers	Medium	Medium to high	Low	High	3–15 weeks (might be ongoing for entire semester)

APPENDIX A CONTD

46. Online Cases, Situations, and Vignettes	Medium	Medium to high	Medium to high	Medium	1–4 weeks
47. Satellite Discussion or Special Interest Groups	Medium	Medium	Low	High	4–12 weeks
48. Small-Group Case Creations and Analyses	Medium	High	Low to medium	High	1–3 weeks
49. Small-Group Exam Question Challenges	Medium	Medium	Low	High	1–2 weeks
50. Reaction or Position Papers	Medium	Medium	Low	Medium	1–2 weeks
Phase 3: Displaying (Addressing Visual Learners)					
51. Anchored Instruction with Online Video	Medium	Medium to high	Low to high	Medium	As needed
52. Explore and Share Online Museums and Libraries	Medium	Medium	Low	Medium	1–2 weeks
53. Concept Mapping Key Information	Medium to high	Medium (time for coordination and grading may vary)	Low to high	High	1–4 weeks
54. Videostreamed Lectures and Presentations	Medium	Medium to high	Low to high	Low	As needed
55. Videostreamed Conferences and Events	Medium	Medium	Low	Medium	1–2 weeks
56. Interactive News and Documentaries	Medium	Medium	Low	Medium	1–3 weeks
57. Interactive Online Performances	High	Medium to high	Low to high	Medium	As needed
58. Design Evaluation	Medium	Medium	Medium to high	Medium	1–2 weeks as needed
59. Design Generation	Medium	Medium	Medium to high	Medium	1–2 weeks as needed

APPENDIX A CONTD

Learning Activity	Risk	Time	Cost	Learner-Centeredness	Duration of Activity
60. Design Reviews and Expert Commentary	Medium	Medium	Low to medium	Medium	As needed
61. Online Timeline Explorations and Safaris	Medium	Medium to high	Low to medium	Medium to high	1–3 weeks
62. Virtual Tours	Medium	Medium	Low to medium	High	1–2 weeks
63. Visual Web Resource Explorations	Low	Low	Low	Medium	1–2 weeks as needed
64. Animations	Medium	Medium	Medium to high	Medium	1 week or as needed
65. Advance Organizers: Models, Flowcharts, Diagrams, Systems, and Illustrations	Low	Medium	Low to medium	Medium	1 week or as needed
66. Virtual Field Trips	Medium	Medium	Low	Medium	As needed
67. Video Modeling and Professional Development	Medium	Medium to high	Low to high	Medium	3–5 weeks or entire course
68. Movie Reviews for Professional Development	Medium	Medium	Low	High	1–3 weeks
69. Whiteboard Demonstrations	Medium	Low	Low	Low to high	As needed
70. Online Visualization Tools	Medium	Medium to high	Low to high	Medium	As needed
71. Video Blogs and Adventure Learning	High	Medium	Low to medium	Medium	1–4 weeks
72. Charts and Graph Tools	Low	Low to medium	Low	High	1–2 weeks or as needed

APPENDIX A CONTD

73. Mashups of Google Maps	High	Medium	Low	High	1–3 weeks or as needed
74. Broadcast Events	High	Medium	High	Medium	As needed
75. Online Multimedia and Visually Rich Cases	Medium	Medium	Low to high	Medium	As needed
Phase 4: Doing (Addressing Hands-On Learners)					
76. Web-Based Survey Research	Medium	Medium	Low to high	High	3–4 weeks
77. Video Scenario Learning	Medium	Medium to high	High	Medium	As needed
78. Content Review Games	Low to medium	Medium	Low to high	Medium	1 week as needed
79. Online Review and Practice Exercises	Medium	Medium to high	Low to high	Medium	1 week or as needed
80. Mock Trial or Fictional Situations	High	High	Low	High	1–2 weeks
81. Online Role Play of Personalities	High	Medium	Low	High	1–2 weeks
82. Action Research	High	Medium	Medium	High	3–6 weeks
83. Interactive Fiction and Continuous Stories	Medium	Medium	Low (assuming free tools exist)	High	1–2 weeks
84. Real-Time Cases	High	High	Medium to high	Medium	1–2 weeks as needed
85. Course Resource Wiki Site	High	Medium to high	Low to medium	High	Throughout course or as needed
86. Wikibook Projects	High	High	Low to medium	High	4–5 weeks
87. Online Glossary and Resource Links Projects	Medium	High	Low	High	3–4 weeks
88. On-Demand and Workflow Learning	High	High	High	High	As needed

APPENDIX A CONTD

Learning Activity	Risk	Time	Cost	Learner-Centeredness	Duration of Activity
89. Digital Storytelling	High	High	Medium	High	3–4 weeks
90. Online Documentation of internship, Field Placement, Practicum Knowledge Applications and Experiences	Medium	Medium	Low to medium	Medium	6–8 weeks
91. Authentic Data Analysis	Medium	Medium	Low to high	Medium	1 week or as needed
92. Online Science Labs and Simulations	Medium	Medium	Low to high	Medium	As needed
93. Simulation Games	Medium	Medium	Low to high	Medium	1–2 weeks or as needed
94. Simulations and Games for Higher-Level Skills	High	High	Low to high	High	4–5 weeks or as needed
95. Client Consulting and Experiential Learning	High	High	Low	High	As needed
96. Online Tutoring and Mentoring	High	High	Low to high	High	As needed
97. Cross-Class Product Development and Creativity	High	High	Low to medium	High	1–4 weeks
98. Cross-Class Content Discussions, Analyses, Competitions, and Evaluations	Medium	Medium to high	Low to medium	High	2–8 weeks
99. Learner Podcast Activities, Events, and Shows	High	Medium	Low to medium	High	1–2 weeks or as needed
100. Design Course Web Site	High	High	Medium to high	High	Semester long (continual)

APPENDIX B: COVER LETTER FOR SURVEY RECRUITMENT

Dear faculty member,

I would like to invite you to participate in this study about using social media in flipped classrooms in Saudi universities: faculty members' experiences. Your participation will be through an online survey which will take approximately 12 - 20 minutes. The survey will be available in both Arabic and English, and you can choose your preferred language to participate in this survey.

Your participation will be voluntary, and there is no compensation for participation. Also, you are free to withdraw from participation any time. Your responses will be confidential and they not be used for purposes other than this study.

In order to participate in this study, you must be a faculty member in a Saudi university (professors, associate professors, assistant professors, instructors, and teaching assistants).

If you have any questions about this survey or want more information about this study, please contact the researcher by **Email:** majedharthy@yahoo.com **OR Phone:** 419-902-4666

Thank you in advance for your participation

Majed Alharthi
Doctoral Candidate- Instructional Technology
Wayne State University
Detroit, MI, USA

عزيزي عضو هيئة التدريس،
السلام عليكم ورحمة الله و بركاته

أود ان أدعوك للمشاركة في هذه الاستبانة حول استخدام وسائل التواصل الإجتماعي في الفصول الدراسية المقلوبة في الجامعات السعودية: خبرات أعضاء هيئة التدريس.
المشاركة سوف تكون من خلال استبانة تستغرق تقريبا ١٢-٢٠ دقيقة. هذه الاستبانة متاحة باللغتين العربية و الإنجليزية، و يمكنك اختيار لغتك المفضلة للمشاركة في هذه الإستبانة.
ستكون مشاركتك تطوعية و ليس هناك تعويض عن المشاركة. أيضا لديك الحرية في الإنسحاب من المشاركة في أي وقت.
إضافة إلى ذلك، إستجابتك لهذه الاستبانة سوف تحتفظ بسرية تامة ولن يتم إستخدامها لأغراض أخرى غير هذه الدراسة.
من أجل ان تشارك في هذه الدراسة يجب ان تكون احد أعضاء هيئة التدريس في إحدى الجامعات السعودية (أستاذ، أستاذ مشارك، أستاذ مساعد، محاضر، معيد).
إذا كان لديك سؤال حول هذه الاستبانة أو تريد مزيد من المعلومات عن هذه الدراسة يرجى الإتصال بالباحث من خلال:
البريد الإلكتروني: majedharthy@yahoo.com أو هاتف: 4199024666

شكرا على تعاونكم

ماجد الحارثي
تكنولوجيا التعليم
جامعة وين ستيت الأمريكية ـ ديترويت ـ ميتشيغان ـ الولايات المتحدة الأمريكية

APPENDIX C: THE INSTRUMENT

The first part: Demographic information
الجزء الأول: المعلومات الأساسية

In which the year you were born?
سنة ميلادك:

Sex: Male, or Female
الجنس: ذكر - أنثى

How many years of teaching experience have you had in higher education? (Specify: ____).
كم عدد سنوات خبراتك التدريسية في التعليم العالي؟ (حدد:.....)

What is your major? ماهو تخصصك
Education تربية
Science علوم
Mathematics رياضيات
Human Studies دراسات إنسانية
Engineering هندسة
Medicine طب
Other (specify: ____) (...:حدد) اخرى

Specify academic rank: حدد الدرجة الأكاديمية
Professor أستاذ
Associate professor أستاذ مشارك
Assistant professor أستاذ مساعد
Instructor محاضر
Teaching assistant معيد

Would you like to volunteer to participate in a later online interview related to this study?
هل ترغب في التطوع للمشاركة في مقابلة عبر الإنترنت في وقت لاحق تتعلق بهذه الدراسة؟
Yes نعم-------Please enter your phone number or email: …… :الرجاء إدخال رقم هاتفك أو ايميلك
No لا

The second part: The Faculty Members' Experiences in Using Social Media in Teaching.
الجزء الثاني: خبرات أعضاء هيئة التدريس في استخدام وسائل التواصل الاجتماعي في التدريس.

This part focuses on faculty members' experiences in using social media in teaching.
هذا الجزء يركز على خبرات أعضاء هيئة التدريس في استخدام وسائل التواصل الاجتماعي في التدريس.

Please select the appropriate option that reflects your use of social media in your teaching.
الرجاء تحديد الخيار المناسب الذي يعكس استخدامك لوسائل التواصل الاجتماعي في تدريسك

	Always دائما	Often غالبا	Sometimes أحياناً	Rarely نادراً	Never إطلاقاً
I use Social media (e.g. Twitter, Facebook, Instagram) in communication with my students. أنا استخدم وسائل التواصل الإجتماعي (مثل: تويتر فيسبوك، إنستقرام) في التواصل مع طلابي					
I ask my students to submit assignments through social media (e.g. Twitter, Facebook, Instagram). أنا أوجه طلابي أن يقدموا المهام و الواجبات الموكلة إليهم عبر وسائل التواصل الاجتماعي (مثل: تويتر، فيسبوك ، إنستقرام)					
I direct my students to share experiences with each other through social media. أنا أوجه طلابي نحو تبادل الخبرات مع بعضهم البعض من خلال وسائل التواصل الاجتماعي					
I use social media as a resource for exchanging knowledge with my students. أنا استخدام وسائل التواصل الاجتماعي كمصدر لتبادل المعرفة مع طلابي					
I show my personal research interests through a public profile on social media. أنا أعرض إهتماماتي البحثية الخاصة من خلال ملف شخصي عام عبر وسائل التواصل الاجتماعي					
I form student groups to collaborate with each other through social media (e.g. Google Hangouts, Discussion Board). أنا أقوم بتشكيل مجموعات من الطلاب للعمل في إطار تعاوني مع بعضهم البعض عبر سائل التواصل الاجتماعي (مثل: تطبيق المحادثة هانق اوتس على جوجل ، منتدى المناقشة)					
I use social media to reach conferences or other classrooms. أنا أستخدام وسائل التواصل الاجتماعي للوصل إلى المؤتمرات و الفصول الدراسية الأخرى					

The third part:

This part focuses on faculty members' point of views about using Social Media in a flipped classroom that provides the student with content before coming to classroom.

القسم الثالث: هذا الجزء يركز على وجهة نظر أعضاء هيئة التدريس حول استخدام وسائل التواصل الاجتماعي في الفصل المقلوب الذي يزود الطلاب مع المحتوى قبل المجئ إلى القاعة الدراسية

Please select the appropriate option that reflects your point of view about using social media as a flipped classroom in the teaching process.

الرجاء تحديد الخيار المناسب الذي يعكس وجهة نظرك حول استخدام وسائل التواصل الاجتماعي كفصل مقلوب في عملية التدريس.

	Strongly agree أوافق بقوة	Agree أوافق	Neutral محايد	Disagree لا أوافق	Strongly disagree لا أوافق بقوة
I think that social media is useful in implementing a flipped classroom. أعتقد أن وسائل التواصل الاجتماعي مفيدة في تنفيذ الفصل المقلوب					
I think that students' uses of social media in higher education have a significant role in enhancing a flipped classroom. أعتقد أن استخدام الطلاب لوسائل التواصل الاجتماعي في التعليم العالي له دور مهم في تعزيز الفصل المقلوب					
I think that using social media in a flipped classroom generates communication between faculty members and students. أعتقد أن استخدام وسائل التواصل الاجتماعي في الفصل المقلوب يولد التواصل بين أعضاء هيئة التدريس و الطلاب.					
I think that using social media in a flipped classroom creates interactive learning environments. أعتقد أن استخدام وسائل التواصل الاجتماعي في الفصل المقلوب يسهم في خلق بيئات تعلم فعالة					
I think that using social media in a flipped classroom eliminates fear and anxiety of discussions that might be in a traditional classroom. أعتقد أن استخدام وسائل التواصل الاجتماعي في الفصل المقلوب يزيل الخوف و القلق من المناقشات التي قد تحدث في الفصل الدراسي التقليدي					
When I use social media in a flipped classroom, I address diverse learner preferences and desires.					

عندما استخدم وسائل التواصل الاجتماعي في الفصل المقلوب ، أنا أتناول ميول و رغبات المتعلمين المتنوعة.					
I think that using social media in a flipped classroom helps me provide feedback to students anytime and anywhere. أعتقد أن استخدام وسائل التواصل الاجتماعي في الفصل المقلوب يساعدني أن أقدم تغذية راجعة للطلاب في أي وقت ومن أي مكان.					
I think that using social media in a flipped classroom delivers the content in multiple forms (e.g. images, videos, audio, etc.). أعتقد أن استخدام وسائل التواصل الاجتماعي في الفصل المقلوب يسهم في تقديم المحتوى في أشكال متعددة (مثل: الصور، الفيديو، الصوت،...الخ)					

The fourth part: This part focuses on learning activities that have been used by faculty members in teaching process through employing social media in a flipped classroom.

الجزء الرابع: هذا الجزء يركز على أنشطة التعلم التي يستخدمها أعضاء هيئة التدريس في عملية التدريس من خلال توظيف وسائل التواصل الاجتماعي في الفصل المقلوب

Please select the appropriate option that reflects your use of social media in implementing a flipped classroom in order to prepare students for the upcoming lecture.

الرجاء تحديد الخيار المناسب الذي يعكس استخدامك لوسائل التواصل الاجتماعي في تنفيذ الفصل المقلوب من أجل تجهيز الطلاب للمحاضرة القادمة

	Always دائماً	Often غالباً	Sometimes أحياناً	Rarely نادراً	Never إطلاقاً
Providing students with some online reading materials related to content of lecture تزويد الطلاب ببعض مواد القراءة على الانترنت و المرتبطة بمحتوى المحاضرة					
Providing students with audio materials related to content of lecture تزويد الطلاب بمواد صوتية متعلقة بمحتوى المحاضرة					
Creating online chats including some questions and answers related to the content of the lecture among students (i.e. each other) and with the instructor إنشاء دردشات عبر الانترنت تتضمن بعض الأسئلة و الأجوبة المرتبطة بمحتوى المحاضرة بين الطلاب بعضهم البعض و مع المعلم					

Assigning students to find and read a certain number of articles related to the topic of the lecture تكليف الطلاب أن يجدوا ويقرأو عدد من المقالات ذات الصلة بموضوع المحاضرة					
Asking students to discuss with each other in online discussion forums including some content related to the topic of the lecture الطلب من الطلاب أن يتناقشوا مع بعضهم البعض في منتديات مناقشة عبر الإنترنت تشمل بعض المحتوى المرتبط بموضوع المحاضرة					
Creating online blogs and asking students to post their reflections about their readings or observations related to the topic of the lecture إنشاء مدونة عبر الإنترنت (مدونات إلكترونية) و الطلب من الطلاب إضافة أرائهم حول قراءتهم و ملاحظاتهم المتعلقة بموضوع المحاضرة					
Creating social networking links (e.g. YouTube, Twitter, Facebook) and asking the students to post their discussions and reflections about the content related to topic of lecture إنشاء روابط على الشبكات الاجتماعية (مثل يوتيوب، تويتر، فيسبوك) و الطلب من الطلاب وضع مناقشتهم و أرائهم حول محتوى مرتبط بموضوع المحاضرة					
Posting of online case studies related to the topic of the lecture to the Web and asking students to add their analysis and reflections about that نشر دراسات مرتبطة بموضوع المحاضرة عبر موقع إلكتروني و الطلب من الطلاب إضافة تحليلهم و ردود أفعالهم حول هذه الدراسات					
Creating instructional video that includes the content related to the lecture and posting it on a YouTube إنشاء فيديو تعليمي يتضمن المحتوى المرتبط إلى المحاضرة و رفع هذا الفيديو على اليوتيوب					
Asking students to watch online conferences or events related to the topic of the lecture توجيه الطلاب أن يشاهدوا عبر الإنترنت مؤتمرات أو أحداث مرتبطة بموضوع المحاضرة					

Creating virtual field trips corresponding to the content of the lecture and asking students to view them إنشاء رحلات ميدانية إفتراضية عبر الإنترنت ذات صلة بمحتوى المحاضرة و توجيه الطلاب لمشاهدتها					
Providing students with figures or charts related to the content of the lecture تزويد الطلاب بأشكال أو رسوم بيانية مرتبطة بمحتوى المحاضرة					
Providing students with some Scenarios by using video relates to the topic of the lecture and includes some challenges for learners تزويد الطلاب ببعض السيناريوهات باستخدام فيديو مرتبط بموضوع المحاضرة و يشتمل بعض التحديات للطلاب					
Providing students with online tutoring and mentoring that help students to interpret and respond to questions related to the topic of the lecture تزويد الطلاب بدروس خصوصية و توجيهات عبر الإنترنت تساعد الطلاب أن يفسروا و يستجيبوا إلى أسئلة مرتبطة بموضوع المحاضرة					
Providing students with online simulation games used to explain concepts and principles related to the content of the lecture. تزويد الطلاب بألعاب محأكاة عبر الإنترنت تستخدم من اجل شرح المفاهيم و المباديء المرتبطة بمحتوى المحاضرة					
Using online site and asking the students to add summaries or comments related to the content of the lecture. استخدام موقع إلكتروني و الطلب من الطلاب أن يضيفوا ملخصات و تعليقات مرتبطة بمحتوى المحاضرة					

The fifth part: This part focuses on the factors which prevent or limit faculty members in Saudi universities from using social media as a flipped classroom tool in their teaching.
الجزء الخامس: هذا الجزء يركز على العناصر التي تمنع أو تحد أعضاء هيئة التدريس في الجامعات السعودية من استخدام وسائل التواصل الاجتماعي كأداة فصل مقلوب في تدريسهم

Please select the appropriate option that reflects your point of view about factors which prevent or limit you from using social media as a flipped classrooms tool in your teaching.
الرجاء تحديد الخيار المناسب الذي يعكس وجهة نظرك حول العناصر التي تمنعك أو تحد من استخدامك لوسائل التواصل الاجتماعي كأداة فصل مقلوب في تدريسك

	Strongly agree أوافق بقوة	Agree أوافق	Neutral محايد	Disagree لا أوافق	Strongly disagree لا أوافق بقوة
Inability to manage social media prevents or limits me from using it as a flipped classroom tool in my teaching. عدم القدرة على إدارة وسائل التواصل الاجتماعي يمنعني أو يحدني من استخدامها كأداة فصل مقلوب في تدريسي					
The required time for preparing the flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching. الوقت المتطلب لتجهيز الفصل المقلوب باستخدام وسائل التواصل الاجتماعي يمنعني أو يحدني من استخدامها كأداة فصل مقلوب في تدريسي					
Lack of adequate experience in creating a flipped classroom by using social media prevents or limits me from using it as a flipped classroom tool in my teaching. عدم وجود الخبرة الكافية لإنشاء الفصل المقلوب باستخدام وسائل التواصل الاجتماعي يمنعني أو يحدني من استخدامها كأداة فصل مقلوب في تدريسي.					
Lack of incentives or rewards for using diverse social media prevents or limits me from using it as a flipped classroom tool in my teaching. قلة الحوافز أو المكافات لاستخدام و سائل التواصل الاجتماعي المتنوعة يمنعني أو يحدني من استخدامها كأداة فصل مقلوب في تدريسي.					
Lack of Internet accessibility to materials prevents or limits me from transforming a traditional classroom to					

a flipped classroom by using of social media. قلة الوصول إلى المواد عبر الإنترنت تمنعني أو تحدني من تحويل الفصل التقليدي إلى فصل مقلوب باستخدام وسائل التواصل الاجتماعي.					
Lack of technological skills of students prevents or limits me from adopting the diverse social media as a flipped classroom tool in my teaching. ضعف المهارات التكنولوجية لدى الطلاب تمنعني أو تحدني من تبني وسائل التواصل الاجتماعي المتنوعة كأداة فصل مقلوب في تدريسي.					
The high cost of technological tools used in the flipped classroom prevents or limits me from adopting social media as a flipped classroom tool. التكلفة العالية للأدوات التكنولوجية المستخدمة في الفصل المقلوب تمنعني أو تحدني من تبني وسائل التواصل الاجتماعي كأداة فصل مقلوب.					

APPENDIX D: INTERVIEW RECRUITMENT EMAIL

Dear (Name),

I am Majed Alharthi, a doctoral candidate in Learning Design & Technology at Wayne State University, Michigan, USA. I am conducting a research study in partial fulfillment for my doctorate. It focuses on using social media in flipped classrooms in Saudi universities, in particular faculty members' experiences. Since you are a faculty member in a Saudi university and because of your respected expertise about the use of social media and employing new approaches in teaching, you have been selected to be an interviewee in this study. The interview will be conducted online in audio form and will take about 20-25 minutes.

Your participation in this study will be voluntary, and you can abstain from any question you do not want to answer. Also, your information and answers will remain confidential and not be used for purposes other than this study's purposes.

During the interview, there will be a number of questions that focus on your use of social media in your teaching with students, your points of view about the role of using social media as a flipped classroom tool in the teaching process, and the factors that may prevent or limit faculty members from using social media as a flipped classroom tool in Saudi universities.

Please reply to this email if you accept the invitation as an interviewee in this study.

Feel free to ask any questions by contacting me at: majedharthy@yahoo.com or by phone at: 419-902-4666.

Thank you.

Warm regards,

Majed Alharthi

APPENDIX E: INTERVIEW PROTOCOL

AGENDA

- Telling interviewee that the interview will be recorded and obtaining permission.
- Clarifying for the interviewee all rights and duties in this interview (confidentiality, withdrawal, etc.)
- Giving the interviewee a brief introduction about the study
- Basic demographic information questions
- Interview questions
- Thanking the participant for participation.

Scenario:

First of all, I would like to thank you for accepting the invitation to participate in this study. You have been selected to be an interviewee in this study because you are a faculty member in a Saudi university, and because of your respected expertise about using of social media and employing new approaches in teaching. In this interview, we will discuss some questions related to the study about using social media in flipped classrooms in Saudi universities. The questions will focus on your own experiences as a faculty member in using social media in your teaching, your attitudes towards employing social media in a flipped classroom in the teaching process, your thoughts about technological diversity used by employing social media in a flipped classroom, and your own points of view about factors that prevent or limit faculty members from using social media in the flipped classroom.

This interview will take about 20-25 minutes of your time. Also, I hope to get your permission to record this interview because this will allow me (and only me) to return to this

interview as a needed; however, all your information and answers will remain confidential and will not be used for other purposes than this study.

In addition, there is no cost to you for your participation in this study. Neither is there any compensation for your participation in this study. However, your participation is greatly appreciated and plays an important role in providing new results about using social media in flipped classroom in Saudi universities.

You can abstain from answering any question you do not want to respond to. Also, you can ask me for more details in case you have some ambiguity about any question or if you want more information. In addition, there are no right or wrong answers; all answers reflect your own point of view about using social media in flipped classrooms in Saudi universities, and you can support your answer with examples.

Please, do not hesitate to contact me if you have any questions about this study now or in the future. My name is Majed Alharthi, telephone number: 419-902-4666 or via email: majedharthy@yahoo.com

Now, please let us start the interview. I hope that you will answer all questions with as more details as you can.

Basic demographic information questions:

- In which year were you born?
- Approximately, how many years of experience do you have in higher education?
- What is your major?
- What is your academic rank?

Interview Questions:

1. How do you use social media in your teaching practices with students? Provide examples.

2. Which types of social media did you use in your teaching? Provide example. Why did you use them?

3. How do you see the role of using social media as a flipped classroom tool in the teaching process? Why?

4. In what ways does the use of social media as a flipped classroom play a significant role in enhancing the educational process?

5. What, if any, factors prevent or limit your use of social media as flipped classroom in teaching practices? Why?

6. What do you think the factors are that prevent or limit other faculty members from using social media as flipped classroom in Saudi universities?

7. How do you see the effect of universities, faculty members or students on the use of social media as a flipped classroom in Saudi universities? Why?

8. What are some of the motivators that encourage faculty member like yourself (in Saudi universities) to use social media as a flipped classroom in teaching practices? Why?

Before ending the interview, please share with me any suggestions, comments, or other information that you think will be beneficial about using social media in flipped classrooms in Saudi universities.

Final comments:

Again thank you very much for your participation in this study.

APPENDIX F: INTERVIEW RECRUITMENT EMAIL (ARABIC VERSION)

رسالة طلب إجراء مقابلة

عزيزي (الاسم)،

السلام عليكم ورحمة الله و بركاته

أنا ماجد الحارثي مرشح لدرجة الدكتوراه في تكنولوجيا التعليم في جامعة وين ستيت الأمريكية في ولاية متشيغان.

أنا أجري دراسة بحثية كجزء لإكمال درجة الدكتوراه. هذه الدراسة تركز على خبرات أعضاء هيئة التدريس في استخدام وسائل التواصل الاجتماعي في الفصل المقلوب في الجامعات السعودية. نظرا لأنك وأحد من أعضاء هيئة التدريس في واحدة من الجامعات السعودية العامة و بسبب خبراتك القيمة حول استخدام وسائل التواصل الاجتماعي و توظيف الأساليب الحديثة في التدريس تم اختيارك لتكون واحد من أعضاء هيئة التدريس الذين سوف يجرى معهم مقابلة في هذه الدراسة. المقابلة سوف تكون صوتية و سوف تستغرق تقريبا ٢٠ ـ٢٥ دقيقة.

مشاركتك في هذه الدراسة سوف تكون تطوعية، و يمكنك الامتناع من الإجابة عن أي سؤال لأترغب في الاجابة عليه. أيضا إجابتك في هذه المقابلة سوف تكون سرية ولن تستخدم في أية أغراض أخرى غيرأغراض هذه الدراسة.

خلال هذه المقابلة سوف يكون هناك عدد من الأسئلة التي تركز على استخدامك لوسائل التواصل الإجتماعي في تدريسك مع الطلاب، أرائك تجاه دور استخدام وسائل التواصل الاجتماعي في الفصل المقلوب أثناء عملية التدريس، و العناصر التي تمنع أو تحد عضو هيئة التدريس من أستخدام وسائل التواصل الاجتماعي كأداة فصل مقلوب في الجامعات السعودية.

من فضلك الرد على هذا الإيميل في حالة قبولك المشاركة في هذه الدراسة.

إذا كان لديك أسئلة لا تتردد أن تتصل بي من خلال رقم الهاتف: ٤١٩٩٠٢٤٦٦٦ أو من خلال الإيميل:

majedharthy@yahoo.com

شكرا على حسن تعاونكم

مع أطيب تحياتي

الباحث

ماجد الحارثي

APPENDIX G: INTERVIEW PROTOCOL (ARABIC VERSION)

بروتوكول المقابلة

جدول الأعمال:

- إخبار المشارك أن المقابلة سوف تسجل و طلب الأذن منه.
- التوضيح للمشارك جميع الحقوق و الواجبات في المقابلة (السرية، الإنسحاب، الخ)
- إعطاء المشارك مقدمة مختصرة عن الدراسة
- أسئلة المعلومات الرئيسية
- أسئلة المقابلة
- شكر المشارك على المشاركة

سيناريو المقابلة:

في البداية أود أن أشكرك لقبول الدعوة للمشاركة معي في هذه الدراسة. أنت أخترت للمشاركة في هذه الدراسة لأنك واحد من أعضاء هيئة التدريس في واحدة من الجامعات السعودية العامة إضافة الى ثقتي في خبراتك القيمة حول استخدام وسائل التواصل الاجتماعي و توظيف الأساليب الجديدة في التدريس. في هذه المقابلة نحن سوف نناقش بعض الأسئلة المرتبطة بدراسة حول استخدام وسائل التواصل الاجتماعي في الفصول المقلوب في الجامعات السعودية. الأسئلة سوف تركز على خبرتك كعضو هيئة تدريس في استخدام وسائل التواصل الاجتماعي في تدريسك، و مواقفك تجاه توظيف وسائل التواصل الاجتماعي في الفصل المقلوب أثناء عملية التدريس، و أرائك حول التنوع التكنولوجي المستخدم خلال توظيف وسائل التواصل الاجتماعي في الفصل المقلوب، إضافة إلى وجهة نظرك حول العقبات التي تؤثر على أعضاء هيئة التدريس و تمنعهم من استخدام وسائل التواصل الاجتماعي في الفصل المقلوب.

المقابلة سوف تستغرق ٢٠ ـ٢٥ دقيقة تقريبا. أيضا أود أن أحصل على موافقتك لتسجيل المقابلة لأن هذه سوف يتيح لي (أنا فقط) العودة إلى المقابلة عند الحاجة، مع العلم أن إجاباتك في هذه المقابلة سوف تبقى سرية و لن تستخدم في أية أغراض أخرى غير هذه الدراسة.

إضافة إلى ذلك، لن يكون هناك أية تكاليف عليك بسبب مشاركتك في هذه الدراسة وليس هناك أية تعويضات مالية من أجل المشاركة في الدراسة، ولكن مشاركتك سوف تكون محل تقدير و سوف يكون لها دور مهم في توفير نتائج جديدة حول استخدام وسائل التواصل الاجتماعي في الفصل المقلوب في الجامعات السعودية.

أنت تستطيع الأمتناع عن إجابة أية سؤال لا ترغب الإجابة علية، أيضا أنت تستطيع أن تسألني تفاصيل أكثر في حالة ما كان لديك غموض حول أية سؤال أو تريد أن تعرف المزيد من المعلومات حول ذلك السؤال. إضافة إلى ذلك، في هذه المقابلة ليس هناك إجابات صحيحة أو خاطئة و جميع الإجابات تعكس وجهة نظرك حول استخدام وسائل التواصل الاجتماعي في الفصل المقلوب في الجامعات السعودية و أنت تستطيع دعم اجاباتك بمزيد من التفاصيل و الأمثلة.

من فضلك، لا تتردد إذا كان لديك سؤال حول هذه الدراسة في الوقت الحاضر أو في المستقبل من الإتصل بالباحث: ماجد الحارثي على رقم الهاتف: ٤١٩٩٠٢٤٦٦٦ أو من خلال الإيميل:majedharthy@yahoo.com

الان أسمح لنا نبدأ المقابلة و أتمنى أن تجيب مع مزيد من التفاصيل قدر الإمكان.

أسئلة المعلومات الأساسية:

- ماهي سنة ميلادك؟
- تقريبا كم عدد سنوات الخبرة لك في التعليم العالي؟
- ماهو تخصصك؟
- ماهي درجتك العلمية.

أسئلة المقابلة:

(١) كيف تستخدم وسائل التواصل الاجتماعي في ممارساتك التعليمية مع الطلاب؟ أذكر أمثلة.

(٢) ماهي أنواع وسائل التواصل الاجتماعي التي استخدمتها في تدريسك؟ أذكر أمثلة؟ لماذا استخدمتها؟

(٣) كيف ترى دوراستخدام وسائل التواصل الاجتماعي كأداة فصل مقلوب في عملية التدريس؟ لماذا؟

(٤) في أي الطرق استخدام وسائل التواصل الاجتماعي كفصل مقلوب يلعب دور مهم في تعزيز العملية التعليمية؟

(٥) ماهي العناصر،إن وجدت، التي تمنع أو تحد استخدامك لوسائل التواصل الاجتماعي كفصل مقلوب في ممارسات التدريس؟ لماذا؟

(٦) ماهي العناصر في إعتقادك التي تمنع أو تحد أعضاء هيئة التدريس من استخدام وسائل التواصل الاجتماعي كفصل مقلوب في الجامعات السعودية؟

(٧) كيف ترى أثر الجامعات أو أعضاء هيئة التدريس أو الطلاب في استخدام وسائل التواصل الاجتماعي كفصل مقلوب في الجامعات السعودية؟ لماذا؟

(٨) ماهي بعض الحوافز التي تشجع عضو هيئة التدريس مثلك (في الجامعات السعودية) من أجل استخدام وسائل التواصل الاجتماعي كفصل مقلوب في ممارسات التدريس؟ لماذا؟

قبل الختام هل لديك أية أقتراحات أو تعليق أومعلومات أخرى تعتقد أنها سوف تكون مفيدة حول إستخدام وسائل التواصل الإجتماعي في الفصل المقلوب في الجامعات السعودية.

الختام:

مرة أخرى شكرا جزيلا لك على المشاركة في هذه الدراسة.

APPENDIX H: RESEARCH INFORMATION SHEET

Title of Study: Using Social Media in Flipped Classrooms in Saudi Universities: Faculty Members' Experiences

Principal Investigator (PI): Majed Alharthi - Learning Design & Technology

Purpose:

This study is being carried out at Wayne State University in the U.S. It aims to find out about faculty members' experiences in Saudi Universities about using social media in flipped classrooms. Also, this study will help us to know how faculty members in Saudi universities consider diverse learning styles in their teaching. Therefore, this study will provide a quick overview of education in Saudi Arabia and the extent to which education in Saudi universities can be designed to suit all learners through the adoption of advanced technological tools. In addition, this study will help us to find out factors which prevent or limit faculty members in Saudi universities from using social media as flipped classrooms in their teaching practices. In turn, it will provide Saudi universities with tangible findings about the extent to which social media can be applied for educational purposes. Hence, this study might help Saudi universities to restore their missions and visions and to stay in line with current technological development.

Study Procedures:

You have been chosen to participate in a research study about using social media in flipped classrooms because you are a faculty member in a Saudi University. If you accept to participate in this study, you will be asked to complete an online survey about using social media in flipped classrooms in Saudi universities. You must complete the survey in one sitting because you cannot save it and return to it later.

Your participation in this study is voluntary, so there is no compensation for your participation. Also, you have right to withdraw from participation at any time, but be sure that your participation is appreciated and plays a significant role in the success of this study. In addition, your responses will be confidential and not be used for purposes other than this study.

The online survey will consist of five parts, and takes approximately 12-20 minutes. The questions will include basic demographic information (age, gender, number of years of experience in higher education, major, and academic rank). Also, it will focus on faculty members' experiences in using social media in teaching, attitudes towards employing social media in a flipped classroom in the teaching process, technological diversity used through employing social media in a flipped classroom, and factors which prevent or limit faculty members from using social media in the flipped classroom.

Benefits:

The study will provide tangible findings about the extent of employing technological diversity for educational purposes in Saudi universities, as well as knowing impediments that hinder it. This, in turn, will lead to improvement of the educational processes in Saudi universities in order to stay in line with the current technological development.

Risks: There are no risks to participating in this study at this time.

Study Costs: There is no cost to you for your participation in this study.

Compensation: There is no compensation for your participation in this study; however, your participation is appreciated and plays a significant role in knowing new results about using social media in flipped classrooms in Saudi universities.

Confidentiality:

The survey will be anonymous, so the survey will be administered in a way that responses cannot be traced back to individual respondents. In addition, information collected during this study will be confidential and not used for other purposes than this study.

Voluntary Participation/Withdrawal:

Participation in this study will be voluntary, and you can withdraw anytime. Also, you can answer questions that you want. Therefore, you are not obligated to participate or complete all questions in the survey.

Questions:

If you have any questions or want more information about this study, you may contact Majed Alharthi at phone number 419-902-4666 or via email majedharthy@yahoo.com.

Participation:

Participation in this study is for faculty members (including all degreed faculty members: male and female and rank: professors, associate professors, assistant professors, instructors, and teaching assistants, regardless of their fields and disciplines) who are working in a Saudi public university during this study. Also, this study will include Saudi faculty members who are currently completing their studies overseas and are affiliated with Saudi public universities as instructors or teaching assistants.

Please, do not participate in this study if you are not a faculty member with a Saudi public university.

APPENDIX I: RESEARCH INFORMATION SHEET (Arabic Version)

ورقة معلومات البحث

عنوان الدراسة: استخدام وسائل التواصل الاجتماعي في الفصول الدراسية المقلوبة في الجامعات السعودية: خبرات أعضاء هيئة التدريس.

الباحث: ماجد الحارثي ـ تكنولوجيا التعليم

الغرض:

تنفذ هذه الدراسة في جامعة وين ستيت الأمريكية. هذه الدراسة تهدف إلى معرفة خبرات أعضاء هيئة التدريس في الجامعات السعودية حول استخدام وسائل التواصل الاجتماعي في الفصول المقلوبة. أيضا هذه الدراسة سوف تساعدنا أن نعرف كيف أعضاء هيئة التدريس في الجامعات السعودية يأخذون في الإعتبار أساليب التعلم المتنوعة في تدريسهم. لذلك هذه الدراسة سوف تعطي نظرة سريعة عن التعليم في المملكة العربية السعودية و إلى أي مدى التعليم في الجامعات السعودية صمم بحيث يلائم جميع المتعلمين من خلال تبني الأدوات التكنولوجية المتقدمة. إضافة إلى ذلك، هذه الدراسة سوف تساعدنا أن نكتشف العناصر التي تمنع أو تحد أعضاء هيئة التدريس في الجامعات السعودية من استخدام وسائل التواصل الاجتماعي كفصول مقلوبة في تدريسهم و هذا بدوره سوف يزود الجامعات السعودية بنتائج ملموسة حول مدى تطبيق وسائل التواصل الاجتماعي للأغراض التعليمية. و بالتالي هذه الدراسة ربما تساعد الجامعات السعودية في إعادة النظر في مهامها و رؤيتها من أجل أن تتواكب مع التطور التكنولوجي الحالي.

إجراءات الدراسة:

لقد تم اختيارك أن تشارك في هذه الدراسة البحثية حول استخدام وسائل التواصل الاجتماعي في الفصول المقلوبة لأنك واحد من أعضاء هيئة التدريس في واحدة من الجامعات السعودية. إذا أنت قبلت المشاركة في هذه الدراسة، سوف يطلب منك أن تكمل استبانة عبر الإنترنت حول استخدام وسائل التواصل الاجتماعي في الفصول المقلوبة في الجامعات السعودية. يجب أن تكمل الاستبانة في جلسة واحدة لأنك لن تستطيع حفظ الأستبانة و العودة لها في وقت لأحق.

مشاركتك في هذه الدراسة سوف تكون تطوعية، لذلك لن يكون هناك أية تعويض لمشاركتك. أيضا سوف يكون لديك الحق أن تنسحب من المشاركة في أي وقت، ولكن تأكد أن مشاركتك سوف تكون محل تقدير و أنها سوف تلعب دور مهم في نجاح هذه

الدراسة . إضافة إلى ذلك، اجاباتك لأسئلة هذه الأستبانة سوف تتمتع بالسرية التامة ولن يتم استخدامها في أغراض أخرى غير هذه الدراسة.

الاستبانة عبر الإنترنت سوف تتألف من خمسة أقسام، وسوف تحتاج تقريبا ١٢-٢٠ دقيقة. الأسئلة سوف تشمل بعض المعلومات الأساسية(العمر، الجنس، عدد سنوات الخبرة في التعليم العالي، التخصص، الدرجة الأكاديمية). أيضا هي سوف تركز على خبرات أعضاء هيئة التدريس في استخدام وسائل التواصل الاجتماعي في التدريس، مواقف أعضاء هيئة التدريس تجاه توظيف وسائل التواصل الاجتماعي في الفصل المقلوب أثناء عملية التدريس، التنوع التنكولوجي المستخدم خلال توظيف وسائل التواصل الإجتماعي في الفصل المقلوب و العناصر التي تمنع أو تحد أعضاء هيئة التدريس من استخدام وسائل التواصل الاجتماعي في الفصل المقلوب.

الفوائد:

الدراسة سوف توفر نتائج ملموسة حول مدى توظيف التنوع التكنولوجي للأغراض التعليمية في الجامعات السعودية، كذلك معرفة العقبات التي تعيق ذلك. هذا بدورة سوف يقود إلى تحسين العملية التعليمية في الجامعات السعودية من أجل أن تتواكب مع التطور التكنولوجي الحالي.

المخاطر:

ليس هناك أية مخاطرللمشاركة في هذه الدراسة في الوقت الحالى.

تكاليف الدراسة:

لاتوجد تكلفة عليك بسبب مشاركتك في هذه الدراسة

التعويضات:

ليس هناك اية تعويضات لمشاركتك في هذه الدراسة، ولكن مشاركتك تكون محل تقدير و سوف يكون لها دور مهم في معرفة نتائج جديدة حول إستخدام وسائل التواصل الإجتماعي في الفصل المقلوب في الجامعات السعودية.

الخصوصية و السرية:

سوف تتميز الاستبانة بالسرية التامة ولن يكون هناك إمكانية لمعرفة اسم المشارك. إضافة الى ذلك، المعلومات التي سوف يتم جمعها أثناء هذه الدراسة سوف تكون سرية و لن تستخدم لأغراض أخرى غير هذه الدراسة.

المشاركة التطوعية و الانسحاب:

المشاركة في هذه الدراسة سوف تكون تطوعية و تستطيع أن تنسحب من المشاركة في أي وقت. أيضا أنت تستطيع أن تجيب على الأسئلة التي تريد. لذلك أن غير مُلزم أن تشارك أو تكمل جميع الأسئلة في هذه الاستبانة.

الأسئلة:

إذا كان لديك أسئلة أو تريد مزيد من المعلومات حول هذه الدراسة، يمكنك الأتصال بالباحث ماجد الحارثي على رقم الهاتف ٤١٩٩٠٢٤٦٦٦ أو من خلال الإيميل majedharthy@yahoo.com

المشاركة:

المشاركة في هذه الدراسة سوف تكون لأعضاء هيئة التدريس (من كلا الجنسين: ذكور و إناث مع أختلاف درجاتهم الأكاديمية: أستاذ، أستاذ مشارك، أستاذ مساعد، محاضر، معيد بغض النظرعن تخصصاتهم أو مجالاتهم) الذين يعملون أثناء هذه الدراسة في واحدة من الجامعات السعودية العامة. أيضا الدراسة تشمل أعضاء هيئة التدريس الذين يكملوا تعليمهم في الخارج و لكنهم ينتمون إلى واحدة من الجامعات السعودية العامة كمحاضرين أو معيدين.

الرجاء عدم المشاركة في هذه الدراسة إذا لم تكن واحد من أعضاء هيئة التدريس في إحدى الجامعات السعودية العامة.

APPENDIX J: IRB APPROVAL

WAYNE STATE UNIVERSITY

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

CONCURRENCE OF EXEMPTION

To: Majed Alharthi
Administration & Organization Stud

From: Dr. Deborah Ellis per M. Tarazi, MD/lm
Chairperson, Behavioral Institutional Review Board (B3)

Date: May 21, 2017

RE: IRB #: 053817B3X

Protocol Title: USING SOCIAL MEDIA IN FLIPPED CLASSROOMS IN SAUDI UNIVERSITIES: FACULTY MEMBERS' EXPERIENCES

Sponsor:

Protocol #: 1705000578

The above-referenced protocol has been reviewed and found to qualify for **Exemption** according to paragraph #2 of the Department of Health and Human Services Code of Federal Regulations [45 CFR 46.101(b)].

- Social/Behavioral/Education Exempt Protocol Summary Form (received in the IRB office 5/15/2017)
- Research Protocol (received in the IRB Office 5/15/2017)
- No medical records are accessed therefore HIPAA does not apply
- Appendix H: Research Information Sheet (English)
- Appendix I: Research Information Sheet (Arabic)
- Appendix B: Recruitment Letter (English & Arabic)
- Appendix E: Interview Protocol (English)
- Appendix G: Interview Protocol (Arabic)
- Appendix D: Interview Recruitment Email (English)
- Appendix F: Interview Recruitment Email (Arabic)
- Appendix C- Survey (English & Arabic)

This proposal has not been evaluated for scientific merit, except to weigh the risk to the human subjects in relation to the potential benefits.

- Exempt protocols do not require annual review by the IRB.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://irb.wayne.edu/policies-human-research.php).

NOTE: Forms should be downloaded from the IRB Administration Office website http://irb.wayne.edu at each use.

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ABSTRACT

USING SOCIAL MEDIA IN FLIPPED CLASSROOMS IN SAUDI UNIVERSITIES: FACULTY MEMBERS' EXPERIENCES

by

MAJED ALHARTHI

May 2018

Advisor: Dr. Ke Zhang

Major: Learning Design & Technology

Degree: Doctor of Philosophy

Traditional education is no longer viable at the present time. In light of technological development and the adoption of a number of diverse technologies in the field of education, the student has become a vital element in learning through student-centered learning environments. Saudi universities are striving diligently to keep up with the technological development and the employment of modern trends in the educational process through the gradual merging of interactive learning methods or strategies, such as the flipped classroom, active learning, cooperative learning, etc. The flipped classroom plays an important role in enhancing the positive role of the learner during the educational process by providing the students with content before the lecture by the use of technology and exploiting class time in debates, problem-solving, creating, synthesizing, and applying. There are many various technology tools and online platforms that can be used in implementing the flipped classroom, such as Blackboard LMS, Google Docs, Wikis, blogs, Facebook, etc. Also, there are a number of advanced countries that have implemented flipped classrooms by the use of various technology tools and social platforms. For example, in Saudi Arabia, Al-Harbi & Alshumaimeri (2016) applied the flipped classroom approach by uploading videos on the Edmodo site. Therefore, this study focused on

faculty members' experiences in using social media as a flipped classroom tool in Saudi Universities.

The study addressed four main questions that focused on: faculty members' experiences in using social media in teaching in Saudi universities, faculty members' attitudes towards using social media in flipped classrooms, exploring how faculty members in Saudi universities use social media as a flipped classroom tool to address students' learning preferences per the R2D2 framework, and factors that prevent or limit Saudi faculty's social media uses in flipped classrooms. In addition, the study discussed significant interaction of the differences between some groups in the study, such as relationship of academic rank to experience in using social media in teaching, relationship of less experienced and more experienced faculty members in Saudi universities to using social media as a flipped classroom, relationship of gender differences to faculty members' attitudes towards using social media in flipped classrooms and factors that prevent or limit Saudi faculty's social media uses in flipped classrooms. It should be mentioned here that this study adopted Bonk and Zhang's R2D2 framework for online learning (Reading, Reflecting, Displaying, and Doing) in order to explore to what extent learning environments and instructional strategies used in Saudi universities support the diversity of students. Mixed-method research was employed in this study. The questionnaire was used as the quantitative method giving the whole picture about the topic and research questions, while the interview was used as the qualitative method helps in getting a deep understanding of the research questions by moving from question to question. A total of 391 participants (199 male and 192 female) participated in the quantitative data collection, among which 8 volunteers (4 male and 4 female) participated in interviews.

The results of this study imply that faculty members in Saudi universities have experiences in using social media in teaching through exchanging knowledge, response to students' questions, and creating groups to help students discuss with each other by the use various types of social media such as Twitter, Snapchat, WhatsApp, Telegram, and Blackboard. Also, the findings imply faculty members' positive tendency towards using social media in flipped classrooms; however the faculty members did not take students' learning preferences into account during the use social media as a flipped classroom tool. Most activities used by faculty members through the employment of social media as a flipped classroom tool focus largely on the reading category that addresses verbal and auditory students. Finally, the findings assert that there are many factors that prevent or limit the faculty members from using social media as a flipped classroom tool such as weak infrastructure, lack of access to the Internet, reluctance to giving up the use of traditional methods in order to employ technology and modern methods in teaching practices, etc.

AUTOBIOGRAPHICAL STATEMENT

MAJED ABDALLAH ALHARTHI

EDUCATIONAL BACKGROUND:

Ph.D. Degree	Wayne State University Detroit, Michigan, USA Major: Learning Design & Technology GPA: 4.00 out of 4.00 Graduation date: May 2018
Master Degree	Emporia State University Kansas, Emporia, USA Major: Instructional Design and Technology (IDT) GPA: 3.90 out of 4.00 Graduation date: May 2014
Bachelor Degree	Taif University Mecca, Taif, KSA Major: Physics GPA: 4.87 out of 5.00 Graduation date: 2004

WORK EXPERIENCE:

- 2005 – 2006: Physics Teacher at the Ministry of Education.
- 2005 – 2006: Member of the municipal elections commission in the province of Kherma.
- 2007 – 2008: Assistant Director of the Alkhurmah Secondary School.
- 2008 – 2010: Assistant teacher at King Abdulaziz University.
- 2010 - 2011: Director of Learning Resources Center at King Abdulaziz University.

AWARDS RECEIVED:

- 2003: Certificate of Appreciation from the Dean of the Teachers College in Taif for high academic achievement.
- 2004: Award of Excellence from the Prince of Taif.
- 2004: Certificate of Appreciation from the Dean of the Teachers College in Taif for top honors in the Physics Department.
- 2012: Certificate of Achievement in Advanced Grammar from Intensive English Program at Emporia State University.
- 2012: Certificate of Achievement in Advanced Writing from Intensive English Program at Emporia State University.